Board Level

Interconnect products

Amphenol

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Amphenol in brief

Amphenol is one of the largest manufacturers of interconnect products in the world. The Company designs, manufactures and markets electrical, electronic and fiber optic connectors, coaxial and flat-ribbon cable, and interconnect systems.

The primary end markets for the Company's products are communications and information processing markets, including cable television, cellular telephone and data communication and information processing systems; aerospace and military electronics; and automotive, rail and other transportation and industrial applications.

Amphenol Socapex in brief

Amphenol Socapex is part of Amphenol Corporate. The company has subsidiaries in France, India, China, and in the United States. Amphenol Socapex is a market leader of MIL-DTL-38999 and derived products, high density board level connectors, field bus and rugged Ethernet solutions, harsh environment optical connectors, MIL-DTL-26482 Series I rugged industrial solutions and EN2997 connectors.

Amphenol Socapex is able to meet customer satisfaction through:

- Agile & Lean Organization
- Global Sourcing
- State-of-the-Art Manufacturing
- Custom design capability
- Competitive Independent Workshops

Amphenol Socapex is aware of environmental issues. Indeed, most of our product solutions are compliant with the European RoHS directive concerning electrical and electronic equipment.

Amphenol Socapex Markets

Military & Aerospace markets:

- Military and commercial avionics and airframe: engines, airframes, cockpit, landing gears…
- C4ISR Land: communication systems, radio…
- Ground vehicles
- Marine applications
- Weapons / Munitions
- Space: communications satellites

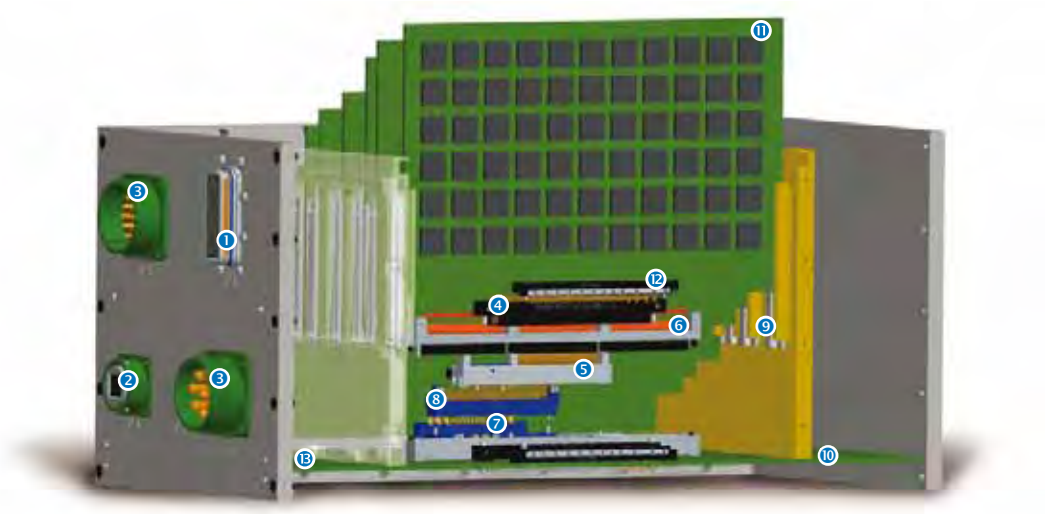
Industrial markets:

- Oil & Gas: geophysics, drilling, production
- Small Urban Electrical Vehicle
- Mining: surface and underground mining, …
- Factory Automation: Machine tool, Networks, Field Buses,…
- Railway: Signaling, Ground and On Board Equipments,…
- Homeland security: CCTV (video), access control,…
- Entertainment

Quick Selection Guide

							
		HiLinX	**HDAS**	**SMASH**	**SIAL**	**SIHD**	**HE8/127**
MARKETS							
	INDUSTRIAL	X	X				X
	COMMERCIAL AVIONICS & AIRFRAME	X	X	X	X	X	X
	MILITARY AVIONICS & AIRFRAME	X	X	X	X	X	X
	GROUND VEHICLE		X				X
	C4ISR	X	X	X			X
	NAVY	X	X			X	
	SPACE				X	X	
APPLICATIONS							
	RADAR			X	X	X	
	ON BOARD COMPUTER		X		X	X	X
	DISPLAY UNITS	X	X				X
	ACTUATORS		X		X	X	
	ENGINE	X	X	X			
	POWER UNITS	X	X				X
	LANDING GEAR / BRAKING SYSTEMS	X	X				X
	ORDNANCE	X		X			
GENERAL CHARACTERISTICS							
PLUG/RECEPTACLE GENDER		Male / Female	Male / Female	Male / Female	Male / Female	Male / Female	All possible
CONTACT TECHNOLOGY		Female Starclip / Male Turned	Female Starclip / Male Turned	Female Starclip / Male Turned	Female cross cavity / Male lateral displacement	Female cross cavity / Male lateral displacement	Female Tuning fork / Male Blade
PLUG CONTACT TERMINATION		90° & straight PC tail / Solder cup / Crimping tail	90° & straight PC tail / Solder cup	SMT straddle mount	90° & straight PC tail / SMT	90° & straight PC tail / SMT / Crimping tail	SMT / 90° & straight PC tail / Crimp / Solder cup
RECEPTACLE CONTACT TERMINATION		90° & Straight PC tail / Solder cup /Press fit / Crimping tail	90° & Straight PC tail / Press fit	Straight PC tail / Press fit	Straight PC tail	Straight PC tail / Wire wrap	SMT / 90° & straight PC tail / Crimp / Solder cup
MODULARITY		Yes	No	Yes	Yes	No	No
HF / POWER / OPTICAL OPTION		Coax Size16 / Power 20A / Radsok® / Amphelux™	No	Coax Size16 / Power 20A / Radsok® / Amphelux™	Coax Size 12 or 16	No	Coax Size16 / Power 20A
DENSITY		**HiLinX 1.905:** 0.16cts / mm^2 [103 cts / in^2] **HiLinX 2.54:** 0.11 cts/ mm^2 [71 cts / in^2]	0,16 cts / mm^2 [103cts / $inch^2$]	0,34cts / mm^2 [130cts / $inch^2$]	0.14 cts / mm^2 [90 cts / $inch^2$]	0.14 cts / mm^2 [90 cts / $inch^2$]	0,11 cts / mm^2 [71cts / $inch^2$]
SIGNAL CONTACTS COUNT		0-206	50-402	132-450	18-392	102-390	17-144
LATERAL FLOATMENT FEATURE		Consult us	Consult us	Yes	Yes	Yes	No
SEE PAGE		**8**	**44**	**58**	**68**	**86**	**98**

Amphenol Socapex Box Capabilities



❶ **SMASH Derivated** (see page 58)
High density rack and panel for rectangular in and out solutions. Possibilities of hybrid inserts, EMI shielding, as well as sealing and rear potting.

❷ **RJ Field** (consult us)
Transforms all standard existing RJ45 Cat5e cordset into an environmental connector, without any cabling operation, and without any tool. Other Infocom connectors such as USD, USBB, RJ11, RJ12, IEEE1394, MTRJ, LC, can also be rugged with the same concept.

❸ **I/O Cylindrical connectors** (consult us)
Amphenol Socapex provides cylindrical I/O front panel connectors per various standards, including MIL DTL 38999, Series I,II, and III, HE308, EN3645, VG96912 / EN2997 / MIL DTL 26482 Series I, VG95328. Numerous platings and arrangements available, in addition to unique custom design capabilities (snatch release, rack and panel, high density, PC tail stand-offs, HF contacts, hybrid optical / electrical solutions ...).

❹ **HDAS Series** (see page 44)
Monolithic high density PCB interconnect. Provides higher current rate capability, and extreme withstanding to harsh environments, such as very high temperature and vibrations level.

❺ **SIAL Series** (see page 68)
Modular PCB interconnect, which provides various combinations of both signal and HF contacts inserts.

❻ **SMASH Series** (see page 58)
Highly robust advanced SEM E form factor connector. For the most demanding electronic packagings interconnects. Provides lateral floatment capability, and numerous features (Filter, shielding, matched impedance, differential pairs …).

❼ **127/HE8 Series** (see page 98)
Proven legacy product, which meets various worldwide standard. Various features, including a wide range of hardware and locking devices.

❽ **SIHD Series** (see page 86)
Monolithic staggered grid connector, with floating capability feature.

❾ **Thermal Clamps** (consult us)
Chassis devices, which both help to dissipate components heating and block the daughter cards into the box slots grooves.

❿ - ⓫ **Printed Circuit Boards for backplanes and daughter cards** (see pages 130 & 131)
Fabrication capabilities include a wide variety of materials to enable increasing signal speeds, deep microvias, buried, blind and backdrilled vias, sequential lamination, panel sizes from 18" x 24" up to 24" x 54", and layer counts up to 60 with a board thickness of 0.400".

⓬ **HiLinX Series** (see page 8)
Unique M55302 modular interconnect. System of interlocking signal, power, fiber optics, and HF modules for dedicated board level mixed solution.

⓭ **Rigid and rigid flex PCBs** (see pages 130 & 131)
Rigid-Flex circuit interconnects featuring blind and buried vias, microvias, bookbinder and other cutting-edge technologies including large format panels.

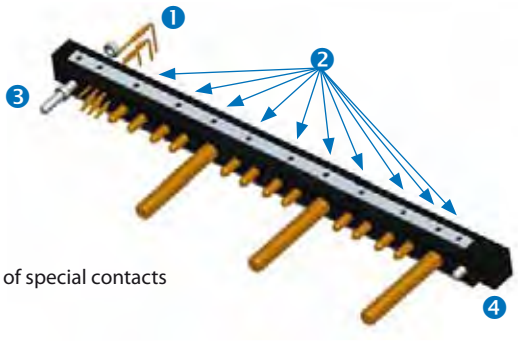
HiLinX

Create the connector you need

Amphenol has engineered a complete range of high & medium density, staggered grid, modular connectors with both 1.905x1.905[.075x.075] & 2.54x2.54 [.100x.100] pitches.
The HiLinX range provides a unique choice of solutions by allowing a mix of various contact types: signal, power, fiber optics and coaxial lines.

The concept

With our HiLinX, build your own connector the way you want it! The HiLinX is a system of modules, metal rails and fittings. Thanks to this modularity, a wide range of contact combinations can be made at the board level. Whatever types of signals required, from power to fiber optics, almost all existing contacts on the market can be adapted to our connector.
Let's maximize the PC board capabilitties!



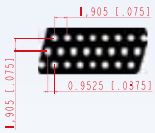
Modularity for custom connector design!

With the HiLinX series, you specify:

- The density of signal contacts
- The type and number of signal contacts
- The type, the number and the position of special contacts
- The guiding and keying system

With the HiLinX series, the design of the connector is up to you![1]

QUICK SELECTION GUIDE

Density	Signal contacts ❶	Special contacts* ❷	Keying & Guiding ❸	Housing ❹	See Section
Medium density: **HiLinX 2.54** 	**FEMALE**  **MALE**  *For solder cup, SMT, soldering on flex, female right angle PC tail, male straight PC tail, consult us.*	**POWER 20A**  **RADSOK® 70A***  **AMPHELUX™**  **COAXIAL**  **For RADSOK® contact, consult us.*	**GUIDING** **4 possibilities** **65 to 68** **KEYING** **64 possibilities** **01 to 64** According to MIL DTL 55302 /57 to /66, /138, /139 *Other fitting, guiding or keying devices, consult us.*	**2 ROWS** **0 to 70* contacts** with or without special contacts **3 ROWS** **0 to 170* contacts** with or without special contacts ** For further arrangements, consult us.*	**HiLinX 2.54** **pages 10 to 27**
PAGE 10 to 27	**PAGE 12** **PAGE 14**	**PAGE 16**	**PAGE 18**	**PAGE 20**	
High density: **HiLinX 1.905** 	**FEMALE**  **MALE**  *For solder cup, SMT, soldering on flex, female right angle PC tail, male straight PC tail, consult us.*	**POWER 20A**  **RADSOK® 70A**  **AMPHELUX™**  **COAXIAL** 	**GUIDING** **4 possibilities** **65 to 68** **KEYING** **64 possibilities** **01 to 64** According to MIL DTL 55302 /190 to /193 *Other fitting, guiding or keying devices, consult us.*	**2 ROWS** **10 to 100 contacts** **3 ROWS** **0 to 205 contacts** with or without special contacts	**HiLinX 1.905** **pages 28 to 41**
PAGE 28 to 41	**PAGE 30** **PAGE 32**	**PAGE 34**	**PAGE 36**	**PAGE 38**	

The HiLinX series serves various markets, including:

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

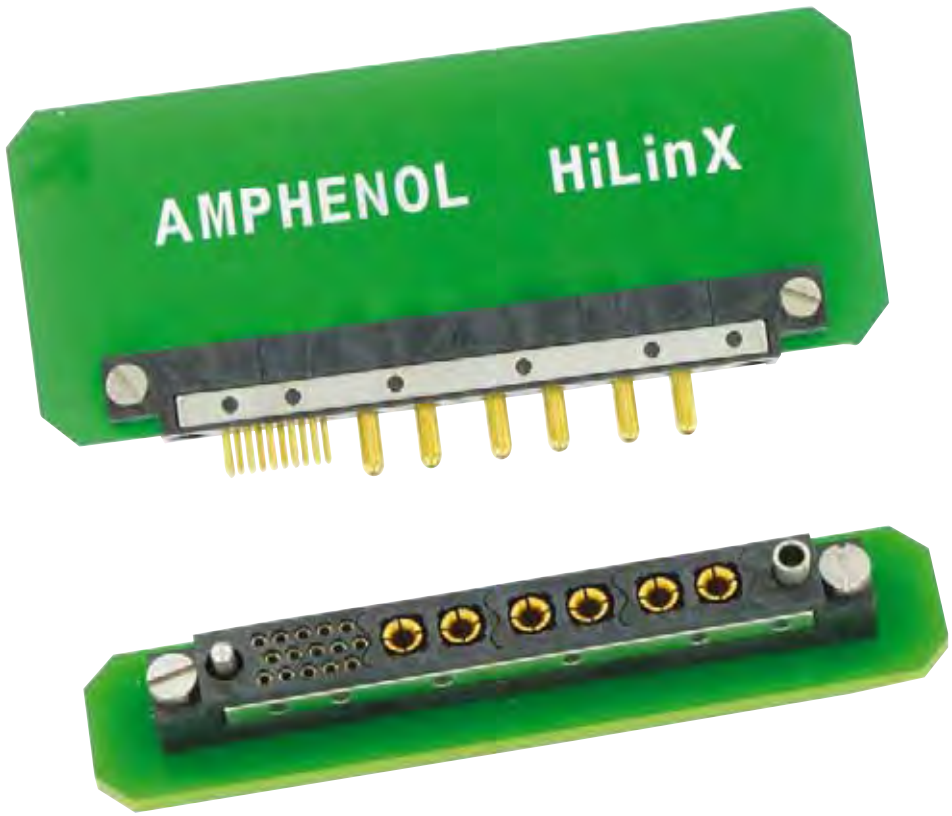
MIL-DTL-55302 /190 to /193

MIL-DTL-55302 /57 to /66, /138, /139

Some HiLinX arrangements are fully compatible with the MIL DTL 55302 (/57 to /66, /138, /139 & /190 to /193 detailed sheets) *(see pages 15 & 33)*.

[1] With HiLinX, feel free to create your own product. Amphenol remains the only provider of both assembly and delivery.
** HiLinX[1.905]: special contacts are available for 3-row version only.*

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



HiLinX Series

The 100% modular and hybrid connector

HILINX 2.54 >>> GENERAL SPECIFICATIONS

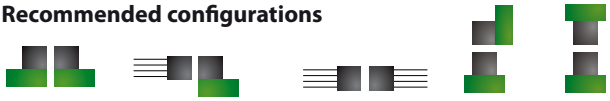
MEDIUM DENSITY

- **A unique connector range, both hybrid and modular**
- **Cost effective, easy to install, highly reliable**
- **More current through each contact**
- **Greater performance and optimal protection in harsh environments**
- **Compatible with signal connectors on the market (MIL DTL 55302 /57 to /66, /138, /139)**
- **2.54 [.100] staggered grid (1.27 [.050] offset), 2.54 [.100] between rows**

Terminations

Special contacts

Recommended configurations



Main characteristics

- Medium density: 0.11 cts/mm2 [71 cts/inch2]
- From 2 to 3 rows, 10 to 170* signal contacts
- 5 A per signal contact (up to 6A current rating available upon request)
- Press-fit solderless attachment technology and crimp contact available
- Some signal contact version are 100% compatible with the M55302 /57 to /66, /138 & /139

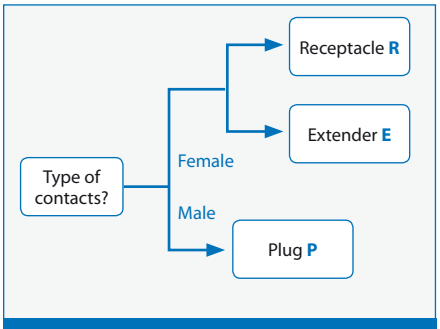
Markets

Standard

MIL-DTL-55302
/57 to /66, /138, /139

Main applications

How to order



Connector type

2
3

Number of rows

Female	Male	Description
	YCS	Right angle PC tail short length
Consult us	**YC**	Right angle PC tail standard length
	YCL	Right angle PC tail long length
YDS		Straight PC tail short length
YD	*Consult us*	Straight PC tail standard length
YDL		Straight PC tail long length
YP	/	Press fit
X	**X**	Crimp contact
Z	**Z**	Solder Cup
Consult us		SMT Solder tail for flexible circuit

Signal modules contact termination type *(see pages 12 to 14)*

HLX2	-	-	---	---	-	---	•••	--	---	--

Plating

ØØ: Standard plating
LF: Lead free plating
for RoHS connector

Number of signal contacts *(see page 16)*

	Signal version						Hybrid version
2 rows	000 010 014 016 020	024 026 030 034 036	040 044 046 050 054	056 060 064 066 070			To be defined Divided by 10
3 rows	000 006 008 012 014 018 020 024 026 030	032 036 038 042 044 048 050 054 056 060	062 066 068 072 074 078 080 084 086 090	092 096 098 102 104 108 110 114 116 120	122 126 128 132 134 138 140 144 146 150	152 156 158 162 164 168 170	To be defined Divided by 12 or 18

Special module *(see page 16)*

	Male	Female
POWER 20A*	**PM1**	**PF1**
RADSOK 70A	*Consult us*	
COAXIAL*	**CM1**	**CF1**
AMPHELUX™ *	**AXM**	**AXF**

* 2 contacts or cavities per module
Number of special modules (X) +
type of the module (XXX)
X XXX (blank = signal contacts only)
Ex: 2PM1 3CM1
2 male power modules and
3 male coaxial modules

Keying, guiding *(see page 18)*

Keying? YES → **01** to **64*** according to MIL DTL 55302
NO → **65 66 67 68**

01 by default
* keying guiding devices are supplied installed

Deviation

Standard? YES → **000**
NO → *Consult us*

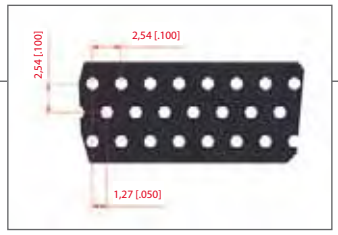
000 by default

RADSOK®, coaxial and Amphelux™ contacts have to be ordered separately.

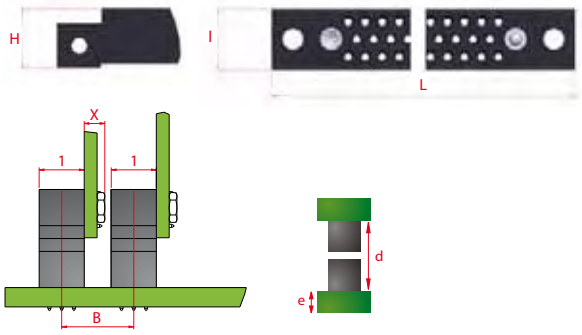
** available upon request*

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

HILINX 2.54 >>> TECHNICAL SPECIFICATIONS



DIMENSIONAL CHARACTERISTICS



H = 8.5 [.335] for receptacles
H = 10.2 $_{MAX}$ [.401] for plugs
I = 6.4$_{MAX}$ [.252] for 2-row connectors
I = 8.95$_{MAX}$ [.352] for 3-row connectors
L = 34.29 [1.350] to 110.49 [4.350] for 2-row connectors
L= 63.5 [2.500] to 165.1 [6.500] for 3-row connectors
B = 7 + X [.276 + X] for 2-row connectors
B = 9.55 + X [.376 + X] for 3-row connectors
X = Board thickness + hardware thickness
d = 17 [.670]
e = 1.8 [.071] to 3.4[.134] or 2.5$_{MIN}$[.098] (for YP contacts)

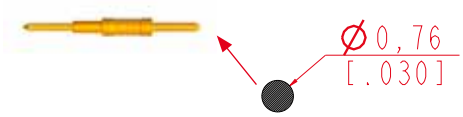
FEMALE CONTACT

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
- Hood: machined brass alloy
- Clip: CuBe [BeCu], stamped and formed

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

MALE CONTACT



- **Mating end diameter:** Ø 0.76 [.030]
- **Contact section** (mating side)**:** 0.45 mm² [.0007 in²]
- **Material:** brass alloy (machined)
- **Plating:** gold over nickel

MATERIALS

- **Guiding devices:** electroless nickel plating over brass CuZn or passivated stainless steel 303
- **Rails:** passivated stainless steel 316L
- **Plastic insert:** thermoplastic LCP, 30% glass-fiber filled

MECHANICAL CHARACTERISTICS	MIL DTL 55302 sections	
Backoff[1] (mm)	> 0.9 [.035]***	N/A
Mating force per contact (N)	0.98 $_{MAX}$	§ 4.5.3
Unmating force per contact (N)	0.981 $_{MAX}$	§ 4.5.3
Durability cycles	500	§ 4.5.9
Sinusoidal vibrations (10 to 2000 Hz) micro discontinuity 2ns	15 g	§ 4.5.10
Random vibrations (5 to 2000 Hz) micro discontinuity 2ns	0.5 g² / Hz	§ 4.5.10
Shocks 6ms ½ sinus 2ns	100 g	§ 4.5.10
ENVIRONMENTAL CHARACTERISTICS		
Thermal shocks (°C)	-65 / +150	§ 4.5.13
Salt Spray (hours)	96	§ 4.5.11
Humidity		
Days	10	§ 4.5.15
Temperature (°C)	25 / 65	
Humidity rate (%)	90-95	
ELECTRICAL CHARACTERISTICS		
Current rating per contacts (A)	5**	§ 4.5.5
Insulation resistance (at 500Vdc) (GΩ)	5 $_{MIN}$	§ 4.5.8
Contact resistance (mΩ)	10 $_{MAX}$	§ 4.5.12
Dielectric Withstanding Voltage (Vrms)	1000 $_{MIN}$	§ 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

** Except for crimp contacts*
*** Other, please consult us*

**** 0.9 [.035] for crimp contact*
1.3 ± 0.1 [.051 ± .004] for other contacts

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

HILINX 2.54 >>> SIGNAL CONTACTS (❶)

FEMALE CONTACTS FOR RECEPTACLES

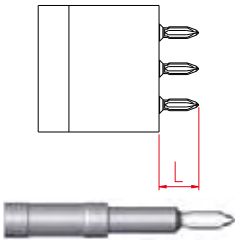
Starclip** female technology

- 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 22: high average current
- Clip for male contact Ø 0.76 ± 0.025 [.030 ± .001]
- **Plating** on active part (clip)

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

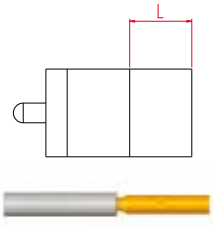
Press-fit



- Solderless assembly
- Mother board or mezzanine connection
- PCB thickness: 2.5 $_{MIN}$ [.098]
- Insertion forces: 65 N typical

Termination style **YP**

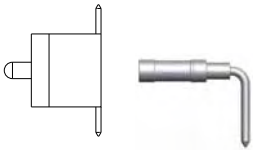
Crimp barrel



- Crimping on wire
- AWG gauge 22 to 24
- Terminations protected by a casing cemented to the moulding

Termination style **X**

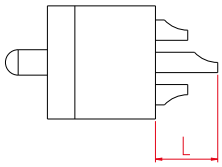
SMT*



- SMT soldering
- PCB thickness: specific, *consult us*

Consult us **T**

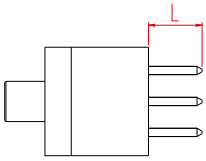
Solder cup*



- Hard-soldering on wire
- Mother board
- Cable to board or cable to cable connection
- Solder cup for 20 to 24 AWG wire

Consult us **Z**

Soldering on flex*



- Hard soldering on flexible circuit
- PCB thickness: specific, *consult us*

Consult us **Y**

	YP	X	Z*	Y*
L $_{MAX}$	2.8 ± 0.2 [.110±.008]	6.3 ± 0.2 [.248 ± .008]	4.9 ± 0.2 [.193 ± .008]	1.5 ± 0.2 [.059 ± .008]
Termination section	Ø 0.82 [.032]	Ø 1.22 [.048]	1.6 $_{MAX}$ [.063]	0.45 ± 0.3 [.018 ± .001]
Barrel standard termination plating µm [µ in]	2 [.079] Ni electrolytic + 15.2 [.598] Ni electroless + 10 [.394] Sn Pb	1 [.039] Cu + 3.5 [.138] Ni + **1.3 [.051] Au**	3 [.118] Ni + 10 [.394] Sn Pb	
Barrel RoHS termination plating** µm [µ in]	N/A	N/A	2.5 [.089] Ni + 5 [.197] bright pure Sn	

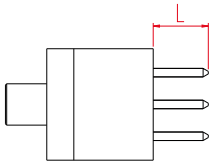
*** Except for crimp contacts* * *Consult us*

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

HILINX 2.54 >>> SIGNAL CONTACTS (❶)

FEMALE CONTACTS FOR RECEPTACLES

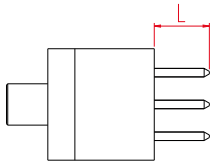
Short straight PC tail



- Thru hole soldering
- Mother board or mezzanine connection
- PCB thickness: 2.5 [.098] for 2-row version
  1.8 [.071] for 3-row version

Termination style	YDS

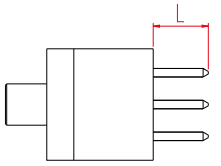
Standard straight PC tail



- Thru hole soldering
- Mother board or mezzanine connection
- PCB thickness: 3.5 [.138] for 2-row version
  2.5 [.098] for 3-row version

Termination style	YD

Long straight PC tail



- Thru hole soldering
- Mother board or mezzanine connection
- PCB thickness: 5 [.197] for 2-row version
  3.5 [.138] for 3-row version

Termination style	YDL

Short right angle PC tail*

- Thru hole soldering
- Extender card
- PCB thickness: *consult us*

Consult us	YCS

Standard right angle PC tail*

- Thru hole soldering
- Extender card
- PCB thickness: *consult us*

Consult us	YC

Long right angle PC tail*

- Thru hole soldering
- Extender card
- PCB thickness: *consult us*

Consult us	YCL

	YDS	YD	YDL	YCS*	YC*	YCL*
L_{MAX}	2-row: 3.5 ± 0.20 [.140 ± .010] 3-row: 2.8 ± 0.20 [.110 ± .010]	2-row: 4.4 ± 0.20 [.172 ± .010] 3-row: 3.5 ± 0.20 [.140 ± .010]	2-row: 5.9 ± 0.20 [.234 ± .010] 3-row: 4.4 ± 0.20 [.172 ± .010]	*Consult us*		
Termination section	Ø 0.68$_{MAX}$ [.027]					
Barrel standard termination plating µm [µ in]	3 [.118] Ni + 10 [.394] Sn Pb					
Barrel RoHS termination plating* µm [µ in]	2.5 [.089] Ni + 6 [.197] bright pure Sn					

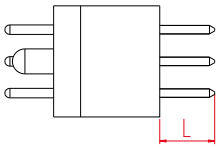
** Consult us*

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

HILINX 2.54 >>> SIGNAL CONTACTS (❶)

MALE CONTACTS FOR PLUGS

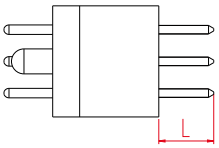
Short straight PC tail*



- Thru hole soldering
- Daughter board or mezzanine connection
- PCB thickness: 1.8 $_{MAX}$ [.071]

Consult us | **YDS**

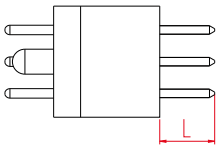
Standard straight PC tail*



- Thru hole soldering
- Daughter board or mezzanine connection
- PCB thickness: 2.5 $_{MAX}$ [.098]

Consult us | **YD**

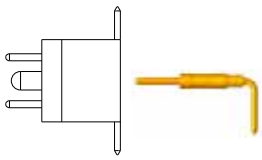
Long straight PC tail*



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

Consult us | **YDL**

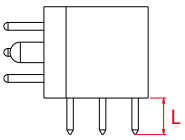
SMT*



- SMT soldering
- Daughter board or extended card
- PCB thickness: specific, *consult us*

Consult us | **T**

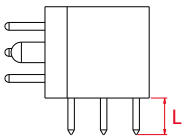
Short right angle PC tail



- Thru hole soldering
- Daughter board or extender card
- PCB thickness: 1.8 $_{MAX}$ [.071]

Termination style | **YCS**

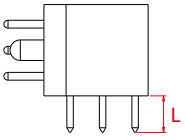
Standard right angle PC tail



- Thru hole soldering
- Daughter board or extender card
- PCB thickness: 2.5 $_{MAX}$ [.098]

Termination style | **YC**

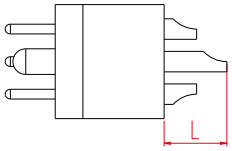
Short right angle PC tail



- Thru hole soldering
- Daughter board or extender card
- PCB thickness: 3.5 $_{MAX}$ [.138]

Termination style | **YCL**

Solder cup*



- Hard soldering on wire
- Daughter board
- Cable to board or cable to cable connection
- Solder cup for 20 to 24 AWG wire

Consult us | **Z**

	YDS*	YD*	YDL*	YCS	YC	YCL	Z*
L $_{MAX}$	2.8 ± 0.20 [.110 ± .010]	3.5 ± 0.20 [.140 ± .010]	4.4 ± 0.20 [.172 ± .010]	2.8 ± 0.20 [.110 ± .010]	3.5 ± 0.20 [.140 ± .010]	4.4 ± 0.20 [.172 ± .010]	2.54± 0.25 [.100 ± .010]
Termination section	Ø 0.68 $_{MAX}$ [.027]						Ø 1.6 $_{MAX}$ [.063]
Mating end diameter	Ø 0.76 ± 0.025 [.030 ± .001]						
Plating (µm [µin])	1 [.039] Cu + 3.5 [.138] Ni + **1.3 [.051] Au**						

** Consult us*

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

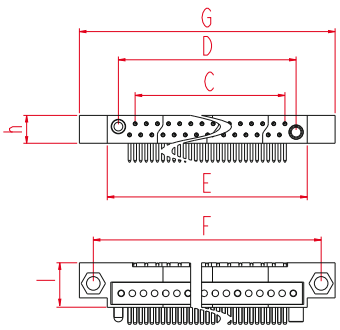
HILINX 2.54 >>> SIGNAL VERSION ONLY

MIL-DTL-55302
/57 to /66, /138 & /139

COMPATIBILITY WITH THE MIL DTL 55302 /57 to /66, /138 & /139 SHEETS

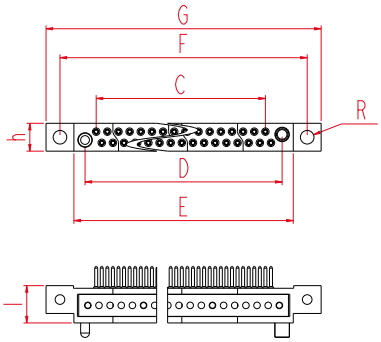
2 rows

Plug: withYCS / YC / YCL contacts



HLX2 P 2 xxx YCS xx – 000
HLX2 P 2 xxx YC xx – 000
HLX2 P 2 xxx YCL xx – 000

Receptacle: with YDS / YD / YDL contacts

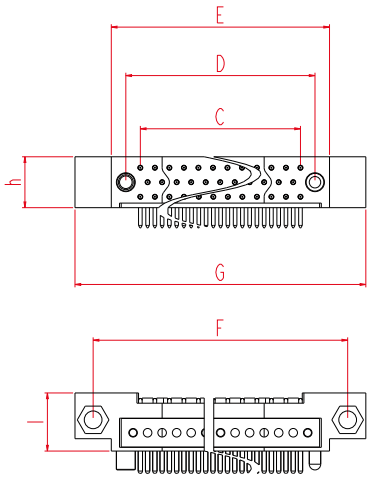


HLX2 R 2 xxx YCS xx – 000
HLX2 R 2 xxx YC xx – 000
HLX2 R 2 xxx YCL xx – 000

Available with 10, 20, 30, 40, 50, 60, 70, 14, 54, 44, 54, 26, 36, 56, 66 signal contacts or with 90, 100, 120 signal contacts with a central fitting

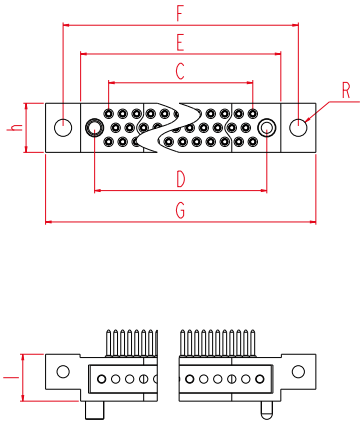
3 rows

Plug: withYCS / YC / YCL contacts



HLX2 P 2 xxx YCS xx – 000
HLX2 P 3 xxx YC xx – 000
HLX2 P 2 xxx YCL xx – 000

Receptacle: with YDS / YD / YDL contacts

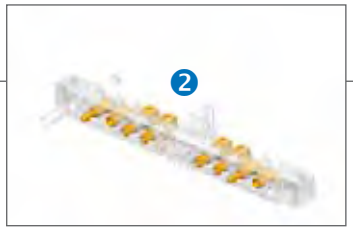


HLX2 R 2 xxx YCS xx – 000
HLX2 R 3 xxx YC xx – 000
HLX2 P R xxx YCL xx – 000

	2-row plug	2-row receptacle	3-row plug	3-row receptacle
C	n x 1.27 – 2.54		(n-2) x 2.54 / 3	
D	C + 6.35		C + 5.08	
E	D + 5.08		D + 5.08	
F	E + 6.35		E + 6.35	
G	F + 6.35		F + 6.35	
h	6.4 MAX		8.95 MAX	
I	8.5 MAX	10.2 MAX	8.5	10.2 MAX
R	3.1		3.1	

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

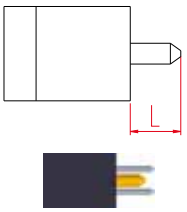
HILINX 2.54 >>> SPECIAL CONTACTS (❷)



FOR 2-ROW CONNECTORS *

POWER contacts

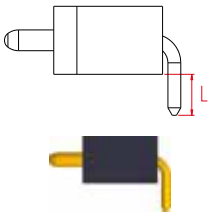
Straight female power contact



- Thru hole soldering
- Mother board
- 2 straight female contacts
- 20A / contact
- PCB thickness: 1.8 [.071] to 2.5 [.098]
- Termination section Ø 1.4 $_{MAXI}$[.055]

Module designation	PF1

Right angle male power contact

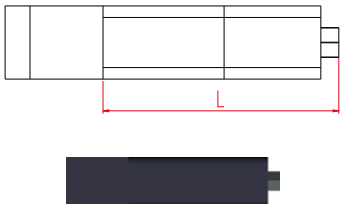


- Thru hole soldering
- Daughter board
- 2 right angle male contacts
- 20A / contact
- PCB thickness: 1.8 [.071] to 2.5 [.098]
- Termination section: Ø 1.2 $_{MAXI}$ [.047]

Module designation	PM1

AMPHELUX™ ARINC 801 termini

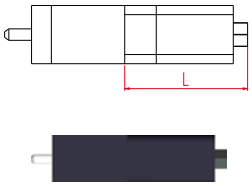
Female amphelux™ contact



- 2 amphelux™ termini
- Multi-mode
- Modules are supplied less contacts, *consult us*
- Complied with the ARINC 801 specification
- Keyed to provide anti-rotation

Module designation	AXF

Male amphelux™ contact

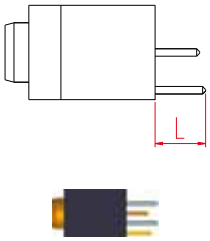


- 2 amphelux™ termini
- Multi-mode
- Modules are supplied less contacts, *consult us*
- Complied with the ARINC 801 specification
- Keyed to provide anti-rotation

Module designation	AXM

COAXIAL contacts

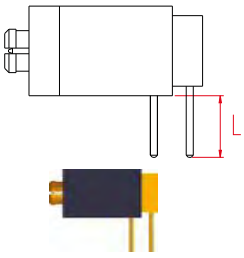
Straight female coaxial contact



- Thru hole soldering
- Mother board or mezzanine connection
- 2 cavities for straight coaxial female contacts
- For more information, *consult us*
- Modules are supplied less contacts

Module designation	CF1

Right angle male coaxial contact



- Thru hole soldering
- Daughter board or extender card
- 2 cavities for right angle coaxial male contacts
- For more information, *consult us*
- Modules are supplied less contacts

Module designation	CM1

RADSOK® contacts

Female cavity module for RADSOK® contact

- 1 cavity for male RADSOK® contact
- Mother board
- 70A / contact
- Termination section: the body shape, the section and the length of the termination are specific to your need: *consult us*

Consult us	-

Right angle male RADSOK® contact

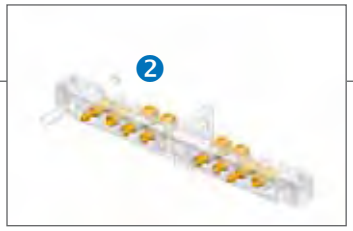
- Fixing with retainer
- Daughter board
- 1 male RADSOK® contact
- 70A / contact
- Termination section: the body shape, the section and the length of the termination are specific to your need: *consult us*

Consult us	-

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

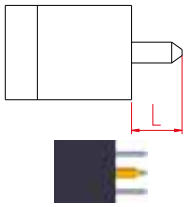
HILINX 2.54 >>> SPECIAL CONTACTS (❷)

FOR 3-ROW CONNECTORS *



POWER contacts

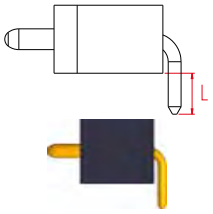
Straight female power contact



- Thru hole soldering
- Mother board
- 2 straight female contacts
- 20A / contact
- PCB thickness: 1.8 [.071] to 2.5 [.098]
- Termination section Ø 1.4 $_{MAXI}$[.055]

Module designation	PF1

Right angle male power contact

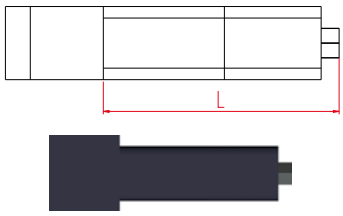


- Thru hole soldering
- Daughter board
- 2 right angle male contacts
- 20A / contact
- PCB thickness: 1.8 [.071] to 2.5 [.098]
- Termination section: Ø 1.2 $_{MAXI}$ [.047]

Module designation	PM1

AMPHELUX™ ARINC 801 termini

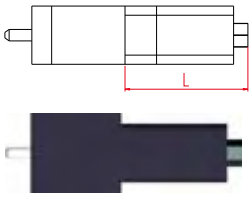
Female amphelux™ contact



- 2 amphelux™ termini
- Multi-mode
- Modules are supplied less contacts, *consult us*
- Complied with the ARINC 801 specification
- Keyed to provide anti-rotation

Module designation	AXF

Male amphelux™ contact

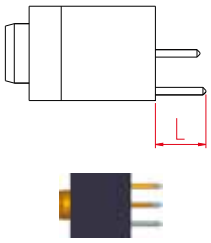


- 2 amphelux™ termini
- Multi-mode
- Modules are supplied less contacts, *consult us*
- Complied with the ARINC 801 specification
- Keyed to provide anti-rotation

Module designation	AXM

COAXIAL contacts

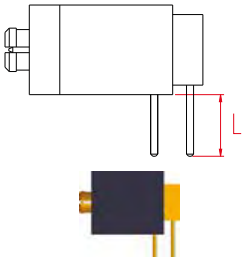
Straight female coaxial contact



- Thru hole soldering
- Mother board or mezzanine connection
- 2 cavities for straight coaxial female contacts
- For more information, *consult us*
- Modules are supplied less contacts

Module designation	CF1

Right angle male coaxial contact



- Thru hole soldering
- Daughter board or extender card
- 2 cavities for right angle coaxial male contacts
- For more information, *consult us*
- Modules are supplied less contacts

Module designation	CM1

RADSOK® contacts

Female cavity module for RADSOK® contact

- 1 cavity for male RADSOK® contact
- Mother board
- 70A / contact
- Termination section: the body shape, the section and the length of the termination are specific to your need: *consult us*

Consult us	-

Right angle male RADSOK® contact

- Fixing with retainer
- Daughter board
- 1 male RADSOK® contact
- 70A / contact
- Termination section: the body shape, the section and the length of the termination are specific to your need: *consult us*

Consult us	-

L $_{MAX}$	PF1	PM1	AXF	AXM	CF1	CM1
2 rows	3.4 [.134]	3.825 [.151]	20.47 [.806]	13.4 [.528]	3 [.118]	4.365 [.172]
3 rows	3.4 [.134]	3.55 [.140]	20.47 [.806]	13.4 [.528]	3 [.118]	3 [.118]

	COAXIAL CONTACTS
Impedance (Ω)	50
Voltage rating (V $_{RMS}$)	180
Current rating (mA)	500
Contact retention (N)	50 $_{MIN}$
Frequency range (GHz)	0 to 1
Contact resistance (mΩ)	12 $_{MAX}$
VSWR at 1 (GHz)	1.3 $_{MAX}$
Insertion and extraction force per contact (N)	1 ≤ F ≤ 15

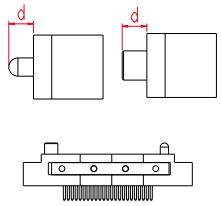
** Hybrid modules will be preferably positioned on the connector sides*

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

HILINX 2.54 >>> KEYING & GUIDING (❸)

NON KEYING GUIDES

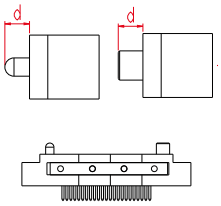
65



- 1 female socket and 1 male pin
- Non keying
- For plug or receptacle
- Passivated stainless steel

HLX2 - - --- --- **65** ---

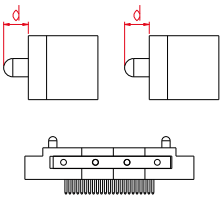
66



- 1 male pin and 1 female socket
- Non keying
- For plug or receptacle
- Passivated stainless steel

HLX2 - - --- --- **66** ---

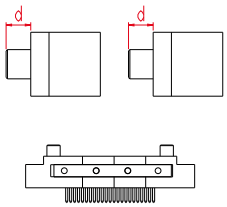
67



- 2 male guide pins
- Non keying
- For plug or receptacle
- Passivated stainless steel

HLX2 - - --- --- **67** ---

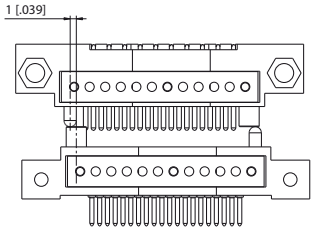
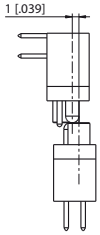
68

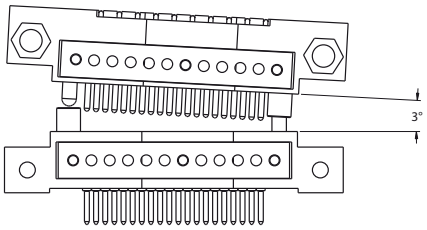
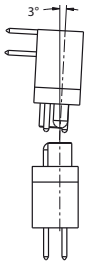


- 2 female guide sockets
- Non keying
- For plug or receptacle
- Passivated stainless steel

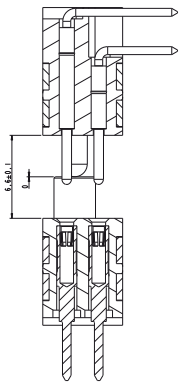
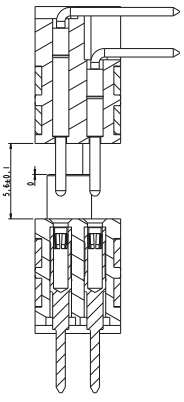
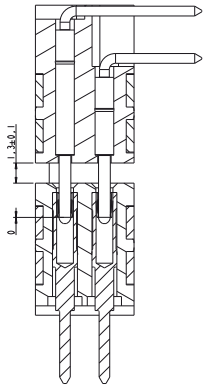
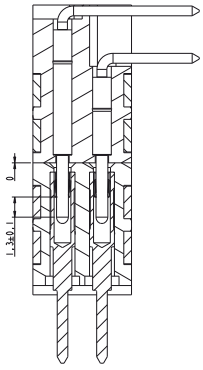
HLX2 - - --- --- **68** ---

REALIGNMENT CAPABILITY

In the longitudinal axis	In the lateral axis
	

In the longitudinal axis	In the lateral axis
	

MATING SEQUENCE*

Guiding		Signal contact	Mated connector
			
6.6 ± 0.1 [.260 ± .004]	5.6 ± 0.1 [.220 ± .004]	1.3 ± 0.1 [.051 ± .004]	1.3 ± 0.1 [.051 ± .004]

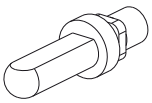
** Except for crimp contacts. Backoff is 0.9 [.035] only for crimp contacts.*

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

HILINX 2.54 >>> KEYING & GUIDING (❸)

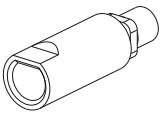
KEYING GUIDES

D shaped male guide pin



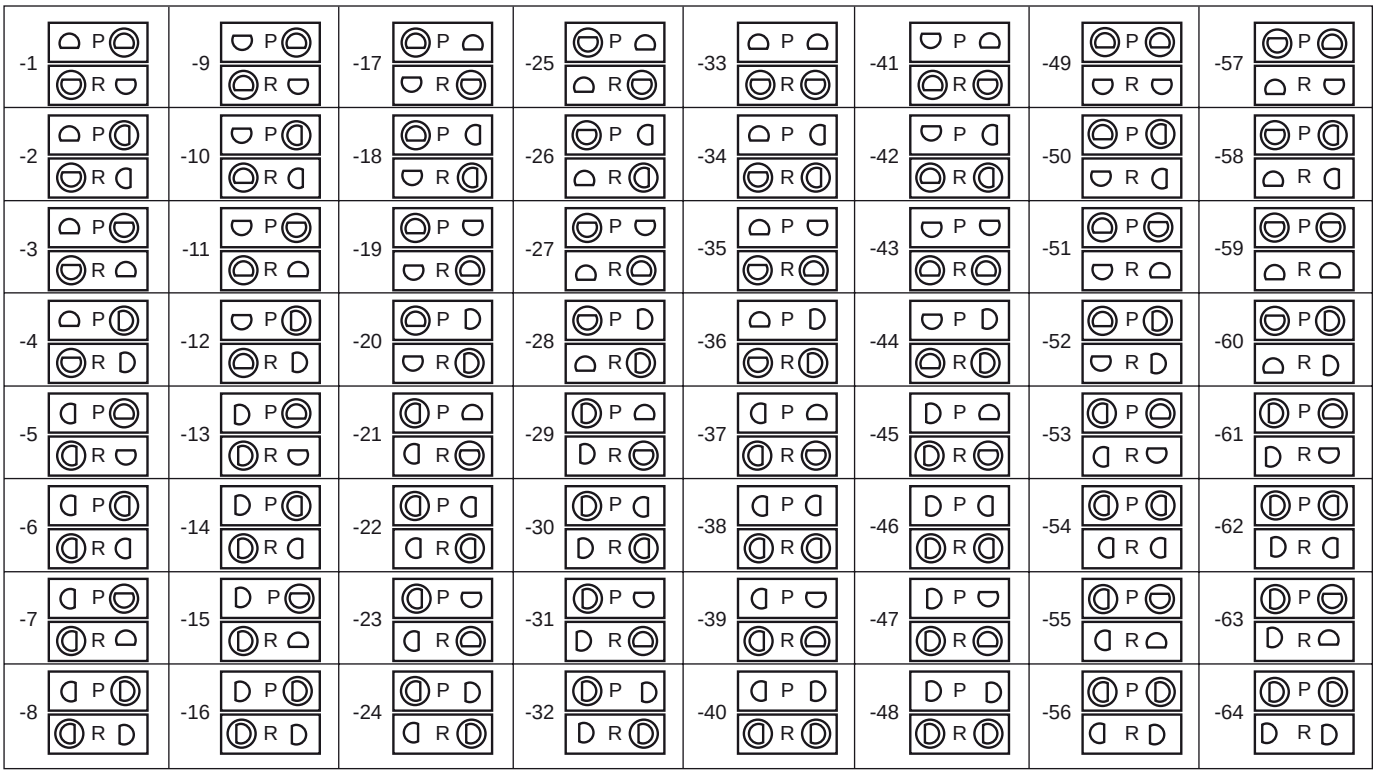
- 4 keying possibilities
- Realignment capability: 1 [.039]
- For plug or receptacle
- Electroless nickel over brass

D shaped female guide socket



- 4 keying possibilities
- Realignment capability: 1 [.039]
- For plug or receptacle
- Electroless nickel over brass

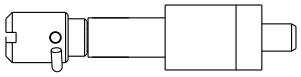
CONNECTOR POLARIZATION WITH 'D' SHAPED GUIDE PINS AND SOCKETS



	Non keying male pin guide	Non keying female socket guide	Keying male pin guide	Keying female socket guide
d	3.3 ± 0.2 [.130 ± .008]			

SPECIAL KEYING CAPABILITIES

Jackset-Jackscrew-Jacksocket



- Turning jackset / Reversed turning jackset
- Turning jackscrew
- Turning jacksocket

Consult us	-

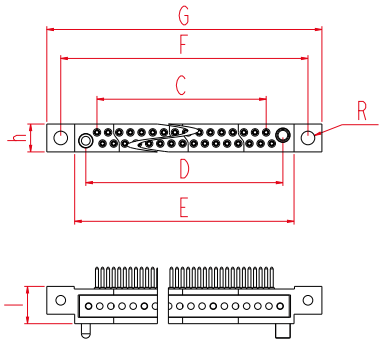
All dimensions are given for information only and are in mm [inch], except as otherwise specified

HILINX 2.54 >>> SIGNAL CONTACT VERSION (4)

TYPICAL ARRANGEMENTS 2 ROWS

n indicates the total number of signal contacts**

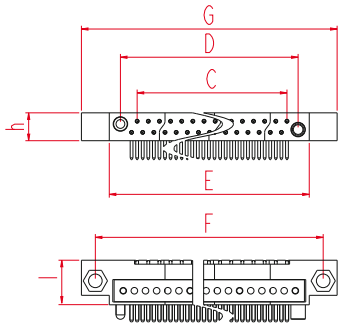
2-row signal contact receptacles, from 10 to 70 contacts*



n = 10, 14, 16, 20, 24, 26, 30, 34, 36, 40, 44, 46, 50, 54, 56, 60, 64, 66, 70**

C	n x 1.27 – 2.54
D	C + 6.35
E	D + 5.08
F	E + 6.35
G	F + 6.35
h	6.4 MAX
I	8.5 MAX
R	3.1

2-row signal contact plugs, from 10 to 70 contacts*



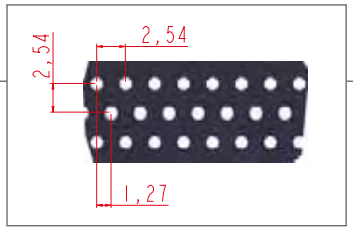
n = 10, 14, 20, 24, 26, 30, 34, 36, 40, 44, 46, 50, 54, 56, 60, 64, 66, 70**

C	n x 1.27 -2.54
D	C + 6.35
E	D + 5.08
F	E + 6.35
G	F + 6.35
h	6.4 MAX
I	10.2 MAX

** in mm. 1mm = 0.03937 inch*

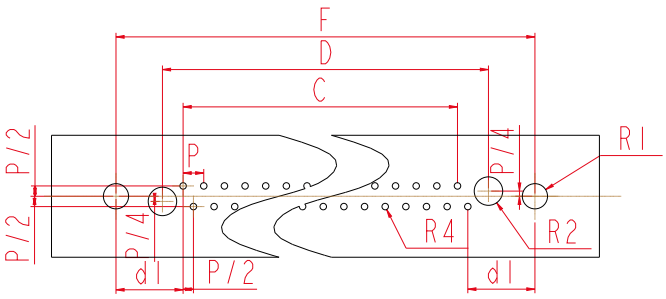
*** Further arrangements up to 160 contacts, with or without central fitting, are available, consult us*

HILINX 2.54 >>> SIGNAL CONTACT VERSION (❹)



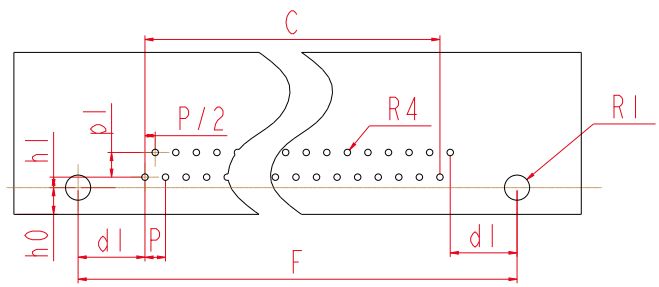
LAYOUTS 2 ROWS

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

n	YC/YCS/YCL CONTACT (male for plug)*
2 ROWS FROM 10 TO 70 CONTACTS**	

n = 10, 14, 20, 24, 26, 30, 34, 36, 40, 44, 46, 50, 54, 56, 60, 64, 66, 70**

C	n x 1.27 – 2.54
D	C + 6.35
F	C + 17.78

n	YC/YCS/YCL CONTACT (male for plug)*
2 ROWS FROM 10 TO 70 CONTACTS**	

n = 10, 14, 20, 24, 26, 30, 34, 36, 40, 44, 46, 50, 54, 56, 60, 64, 66, 70**

C	n x 1.27 – 2.54
F	C + 17.78

p	p/2	p/4	p1	R1	R2	R4	d1	h0	h1
2.54 [.100]	1.27 [.050]	0.635 [.025]	3.05 [.120]	To be defined by customer. Hardware is not provided with connector.	Not compulsory. 3.75 ± 0.1 [.18 ± .004]	Ø 0.8 MIN [.031] With metallization	8.255 [.325]	5.3 MAX [.209]	1.27 [.050]

in mm. 1mm = 0.03937 inch
*** Further arrangements up to 160 contacts, with or without central fitting, are available, consult us*

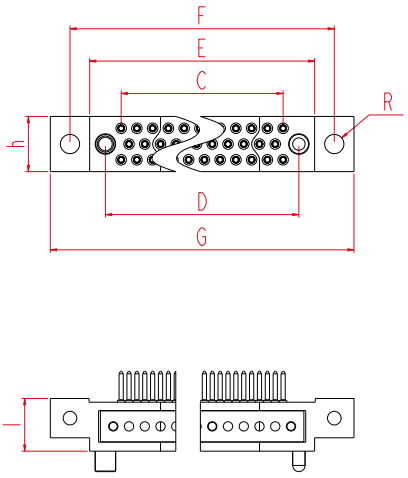
All dimensions are given for information only and are in mm [inch], except as otherwise specified

HILINX 2.54 >>> SIGNAL CONTACT VERSION (❹)

TYPICAL ARRANGEMENTS 3 ROWS

n indicates the total number of signal contacts**

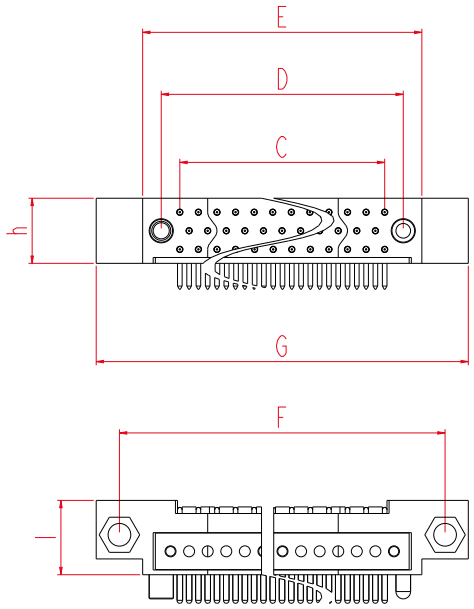
3-row signal contact receptacles, from 50 to 170 contacts*



n = 00, 06, 08, 12, 14, 18, 20, 24, 26, 30, 32, 36, 38, 42, 44, 48, 50, 54, 56, 60, 62, 66, 68, 72, 74, 78, 80, 84, 86, 90, 92, 96, 98, 102, 104, 108, 110, 114, 116, 120, 122, 126, 128, 132, 134, 138, 140, 144, 146, 150, 152, 156, 158, 162, 164, 168, 170**

C	(n – 2) x 2.54 / 3
D	C + 5.08
E	D + 5.08
F	E + 6.35
G	F + 6.35
h	8.95 MAX
I	8.5
R	3.1

3-row signal contact plugs, from 50 to 170 contacts*

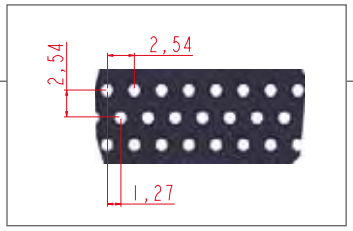


n = 00, 06, 08, 12, 14, 18, 20, 24, 26, 30, 32, 36, 38, 42, 44, 48, 50, 54, 56, 60, 62, 66, 68, 72, 74, 78, 80, 84, 86, 90, 92, 96, 98, 102, 104, 108, 110, 114, 116, 120, 122, 126, 128, 132, 134, 138, 140, 144, 146, 150, 152, 156, 158, 162, 164, 168, 170**

C	(n – 2) x 2.54 / 3
D	C + 5.08
E	D + 5.08
F	E + 6.35
G	F + 6.35
h	8.95 MAX
I	10.16

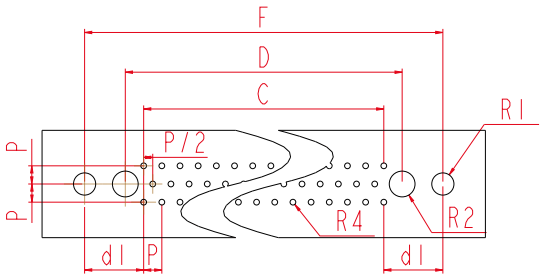
*in mm. 1mm = 0.03937 inch
** Further arrangements up to 188 contacts, with or without central fitting, are available, consult us

HILINX 2.54 >>> SIGNAL CONTACT VERSION (❹)



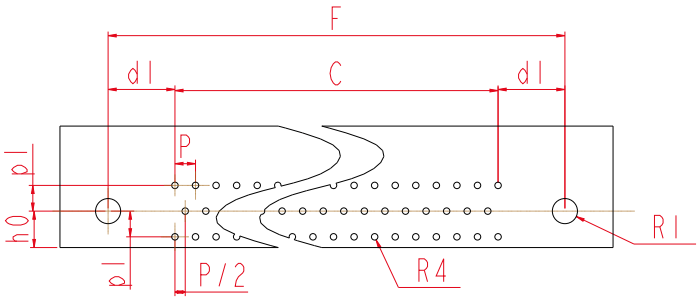
LAYOUTS 3 ROWS

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

n	YD/YDS/YDL & YP CONTACT (female for receptacle)*
3 ROWS FROM 50 TO 170 CONTACTS**	

n = 00, 06, 08, 12, 14, 18, 20, 24, 26, 30, 32, 36, 38, 42, 44, 48, 50, 54, 56, 60, 62, 66, 68, 72, 74, 78, 80, 84, 86, 90, 92, 96, 98, 102, 104, 108, 110, 114, 116, 120, 122, 126, 128, 132, 134, 138, 140, 144, 146, 150, 152, 156, 158, 162, 164, 168, 170**

C	(n – 2) x 2.54 / 3
D	C + 5.08
F	C + 16.51

n	YC/YCS/YCL CONTACT (male for plug)*
3 ROWS FROM 50 TO 170 CONTACTS**	

n = 00, 06, 08, 12, 14, 18, 20, 24, 26, 30, 32, 36, 38, 42, 44, 48, 50, 54, 56, 60, 62, 66, 68, 72, 74, 78, 80, 84, 86, 90, 92, 96, 98, 102, 104, 108, 110, 114, 116, 120, 122, 126, 128, 132, 134, 138, 140, 144, 146, 150, 152, 156, 158, 162, 164, 168, 170**

C	(n – 2) x 2.54 / 3
F	C + 16.51

p	p/2	p1	R1	R2	R4	d1	h0
2.54 [.100]	1.27 [.050]	3.175 [.125]	To be defined by customer. Hardware is not provided with connector.	Not compulsory. 3.75 ± 0.1 [.18 ± .004]	Ø 0.8 $_{MIN}$ [.031] With metallization	8.255 [.325]	3.5 $_{MIN}$ [.138]

** in mm: 1mm = 0.03937 inch*

*** Further arrangements up to 188 contacts, with or without central fitting, are available, consult us*

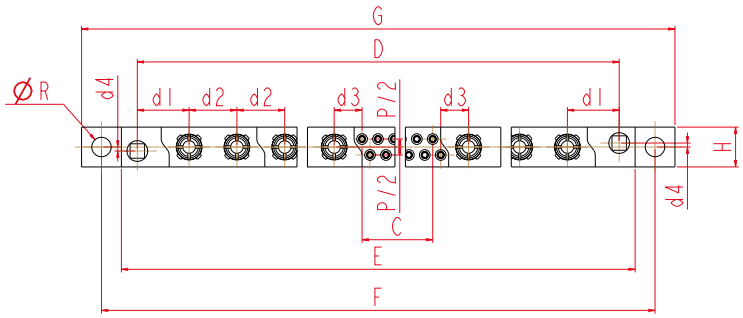
All dimensions are given for information only and are in mm [inch], except as otherwise specified

HILINX 2.54 >>> HYBRID VERSION (4)

DIMENSIONS 2 ROWS**

s indicates the total number of special contacts.
n indicates the total number of signal contacts

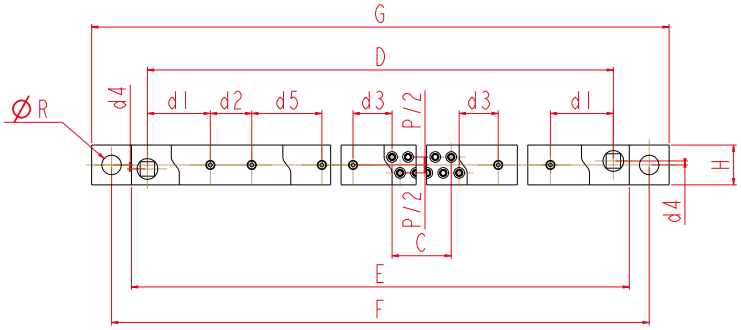
Power contacts 20A*



s = 2, 4, 6…

C	n x 1.27 – 2.54
D	8.89 + s x 7.62 + n x 1.27
E	D + 5.08
F	E + 6.35
G	F + 6.35
H	6.4 MAX
d1	8.25 [.325]
d2	7.62 [.300]
d3	4.445 [.175]
d4	0.635 [.025]
R	3.1+0.1 [.122 + .004]
p/2	1.27 [.050]

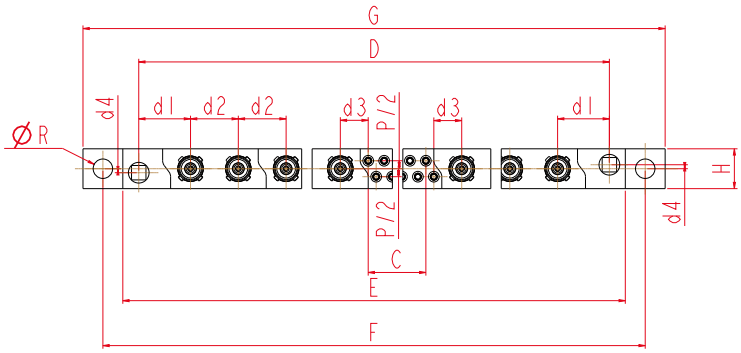
AMPHELUX™ contacts*



s = 2, 4, 6…

C	n x 1.27 – 2.54
D	8.89 + s x 8.89 + n x 1.27
E	D + 5.08
F	E + 6.35
G	F + 6.35
H	6.4 MAX
d1	10.035 [.395]
d2	6.6 [.260]
d3	6.225 [.245]
d4	0.635 [.025]
d5	11.18 [.440]
R	3.1+0.1 [.122 + .004]
p/2	1.27 [.050]

Coaxial contacts*



s = 2, 4, 6…

C	n x 1.27 – 2.54
D	8.89 + s x 7.62 + n x 1.27
E	D + 5.08
F	E + 6.35
G	F + 6.35
H	6.4 MAX
d1	8.25 [.325]
d2	7.62 [.300]
d3	4.445 [.175]
d4	0.635 [.025]
R	3.1+0.1 [.122 + .004]
p/2	1.27 [.050]

RADSOK® contacts 70A*

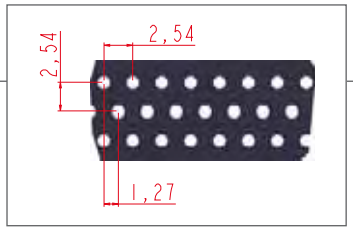
Please consult us

** in mm: 1mm = 0.03937 inch*

*** Hybrid modules will be preferrably positionned on the connector sides*

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

HILINX 2.54 >>> HYBRID VERSION (❹)

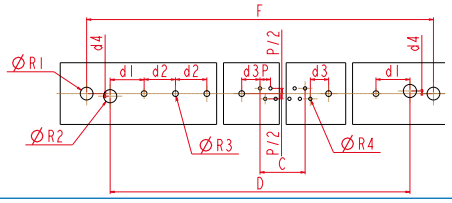


LAYOUTS 2 ROWS**

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

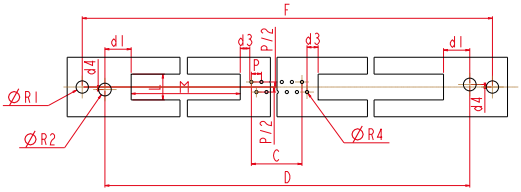
With YD/YDS/YDL & YP CONTACT (female for receptacle)*

WITH POWER CONTACT 20A



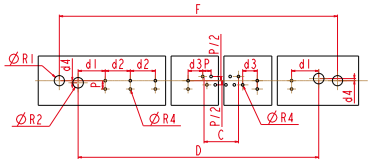
C	n x 1.27 – 2.54
D	8.89 + s x 7.62 + n x 1.27
F	D + 11.43

WITH AMPHELUX™ CONTACT



C	n x 1.27 – 2.54
D	8.89 + s x 8.89 + n x 1.27
F	D + 11.43
L	6.45 MIN
M	Depending on s

WITH COAXIAL CONTACT

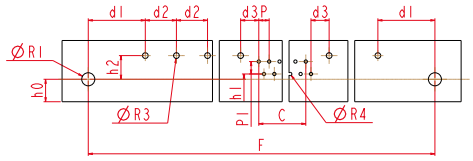


C	n x 1.27 – 2.54
D	8.89 + s x 7.62 + n x 1.27
F	D + 11.43

YDS/YD/YDL & YP	d_1	d_2	d_3	d_4	R_1	R_2	R_3	R_4	p/2	p
Power	8.25 [.325]	7.62 [.300]	4.445 [.175]	0.635 [.025]	3.1 MIN [.122]	3.6 MIN [.142]	1.5 MIN [.059]	0.75 MIN [.030]	1.27 [.050]	2.54 [.100]
Amphelux™	6.61 MAX [.260]		2.8 MAX [.110]							
Coaxial	8.25 [.325]	7.62 [.300]	4.445 [.175]							

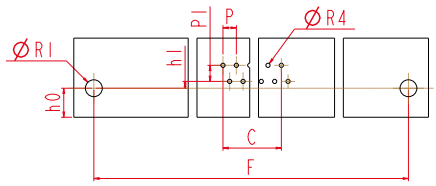
With YC/YCS/YCL CONTACT (male for plug)*

WITH POWER CONTACT 20A



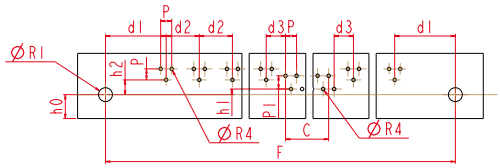
C	n x 1.27 – 2.54
F	20.32 + s x 7.62 + n x 1.27

WITH AMPHELUX™ CONTACT



C	n x 1.27 – 2.54
F	20.32 + s x 8.89 + n x 1.27

WITH COAXIAL CONTACT



C	n x 1.27 – 2.54
D	8.89 + s x 7.62 + n x 1.27
F	20.32 + s x 7.62 + n x 1.27

YC/YCS/YCL	d_1	d_2	d_3	R_1	R_3	R_4	p	p_1	h_1	h_0	h_2
Power	13.97 [.550]	7.62 [.300]	4.445 [.175]	3.1 MIN [.122]	1.5 MIN [.059]	0.75 MIN [.030]	2.54 [.100]	3.048 [.120]	1.2954 [.051]	3.5 MIN [.138]	5.8 [.228]
Amphelux™											
Coaxial	13.97 [.550]	7.62 [.300]	4.445 [.175]								3.39 [.133]

** in mm: 1mm = 0.03937 inch*

*** Hybrid modules will be preferrably positionned on the connector sides*

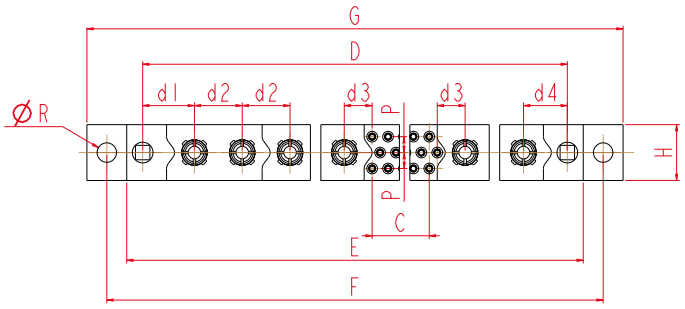
All dimensions are given for information only and are in mm [inch], except as otherwise specified

HILINX 2.54 >>> HYBRID VERSION (4)

DIMENSIONS 3 ROWS**

s indicates the total number of special contacts.
n indicates the total number of signal contacts

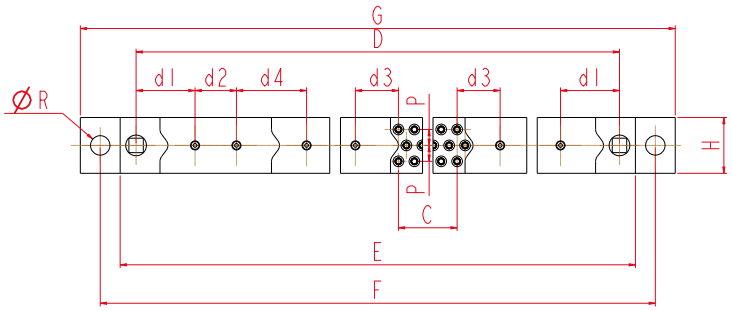
Power contacts 20A*



s = 2, 4, 6…

C	(n – 2) x 2.54 / 3
D	7.62 + s x 7.62 + n x 0.847
E	D + 5.08
F	E + 6.35
G	F + 6.35
H	8.95 MAX
d1	8.255 [.325]
d2	7.62 [.300]
d3	4.445 [.175]
d4	6.985 [.275]
R	3.1 +0.1 [.122 +.004]
p	2.54 [.100]

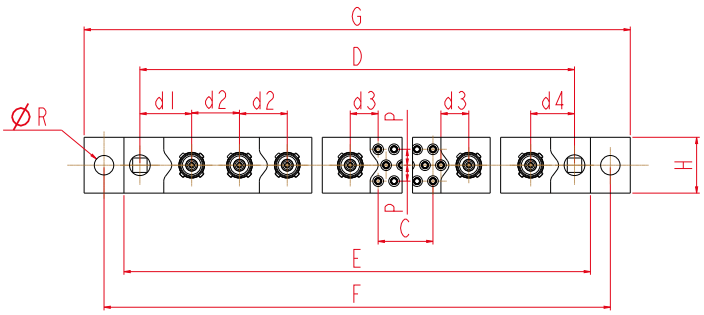
AMPHELUX™ contacts*



s = 2, 4, 6…

C	(n – 2) x 2.54 / 3
D	7.62 + s x 8.89 + n x 0.847
E	D + 5.08
F	E + 6.35
G	F + 6.35
H	8.95 MAX
d1	9.4 [.370]
d2	6.6 [.260]
d3	6.86 [.270]
d4	11.18 [.440]
R	3.1 +0.1 [.122 +.004]
p	2.54 [.100]

Coaxial contacts*



s = 2, 4, 6…

C	(n – 2) x 2.54 / 3
D	7.62 + s x 7.62 + n x 0.847
E	D + 5.08
F	E + 6.35
G	F + 6.35
H	8.95 MAX
d1	8.255 [.325]
d2	7.62 [.300]
d3	4.445 [.175]
d4	6.985 [.275]
R	3.1 +0.1 [.122 +.004]
p	2.54 [.100]

RADSOK® contacts 70A*

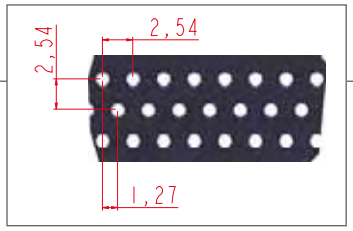
Please consult us

** in mm: 1mm = 0.03937 inch*

*** Hybrid modules will be preferrably positionned on the connector sides*

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

HILINX 2.54 >>> HYBRID VERSION (❹)

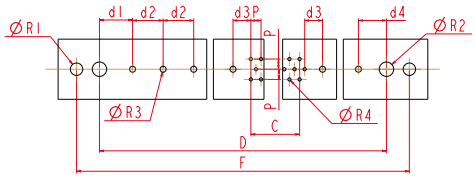


LAYOUTS 3 ROWS**

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

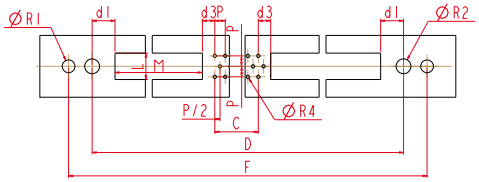
With YD/YDS/YDL & YP CONTACT (female for receptacle)*

WITH POWER CONTACT 20A



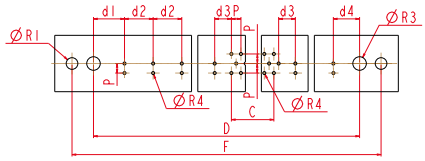
C	(n – 2) x 2.54 / 3
D	7.62 + s x 7.62 + n x 0.847
F	D + 11.43

WITH AMPHELUX™ CONTACT



C	(n – 2) x 2.54 / 3
D	7.62 + s x 8.89 + n x 0.847
F	D + 11.43
L	6.45 MIN
M	Depending on s

WITH COAXIAL CONTACT

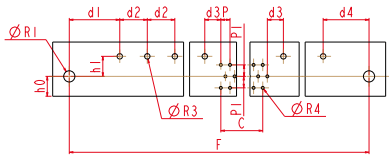


C	(n – 2) x 2.54 / 3
D	7.62 + s x 7.62 + n x 0.847
F	D + 11.43

YDS/YD/YDL & YP	d_1	d_2	d_3	d_4	R_1	R_2	R_3	R_4	p/2	p
Power	8.255 [.325]	7.62 [.300]	4.445 [.175]	6.985 [.275]	3.1 MIN [.122]	3.6 MIN [.142]	1.5 MIN [.059]	0.75 MIN [.030]	1.27 [.050]	2.54 [.100]
Amphelux™	5.55 MAX [.219]		3.0 MAX [.118]							
Coaxial	8.255 [.325]	7.62 [.300]	4.445 [.175]	6.985 [.275]						

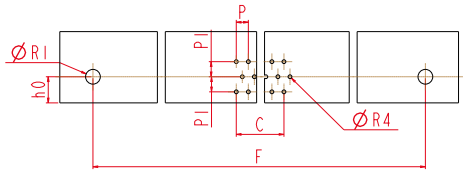
With YC/YCS/YCL CONTACT (male for plug)*

WITH POWER CONTACT 20A



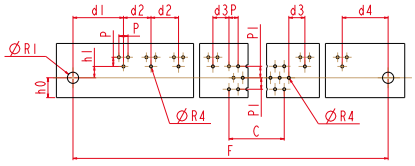
C	(n – 2) x 2.54 / 3
F	19.05 + s x 7.62 + n x 1.27

WITH AMPHELUX™ CONTACT



C	(n – 2) x 2.54 / 3
F	19.05 + s x 8.89 + n x 1.27

WITH COAXIAL CONTACT



C	(n – 2) x 2.54 / 3
F	19.05 + s x 7.62 + n x 1.27

YC/YCS/YCL	d_1	d_2	d_3	d_4	R_1	R_3	R_4	p	p_1	h_1	h_0
Power	13.97 [.550]	7.62 [.300]	4.445 [.175]	12.7 [.500]	3.1 MIN [.122]	1.5 MIN [.059]	0.75 MIN [.030]	2.54 [.100]	3.048 [.120]	5.545 [.218]	5.3 MIN [.209]
Amphelux™											
Coaxial	13.97 [.550]	7.62 [.300]	4.445 [.175]	12.7 [.500]						3.135 [.123]	

** in mm: 1mm = 0.03937 inch*

*** Hybrid modules will be preferrably positionned on the connector sides*

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

HILINX 1.905 >>> GENERAL SPECIFICATIONS

HIGH DENSITY

- **A unique connector, both hybrid and modular**
- **Cost effective, easy to install, highly reliable**
- **More current through each contact**
- **Greater performance and optimal protection in harsh environments**
- **Compatible with signal connectors on the market (MIL-DTL-55302/190 to /193)**
- **1.905[.075] staggered grid (0.9525[.0375] offset), 1.905[.075] between rows**

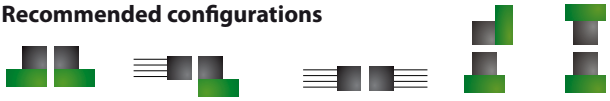
Terminations

Special contacts

Main characteristics

- High density: 0.16 cts / mm² [103 cts / inch²]
- From 2 to 3 rows, 10 to 206 signal contacts
- 3A per signal contact (up to 5A current rating available upon request)
- Press-fit solderless attachment technology available
- Some signal contact version are 100% compatible with the M55302 /190 to /193.

Recommended configurations



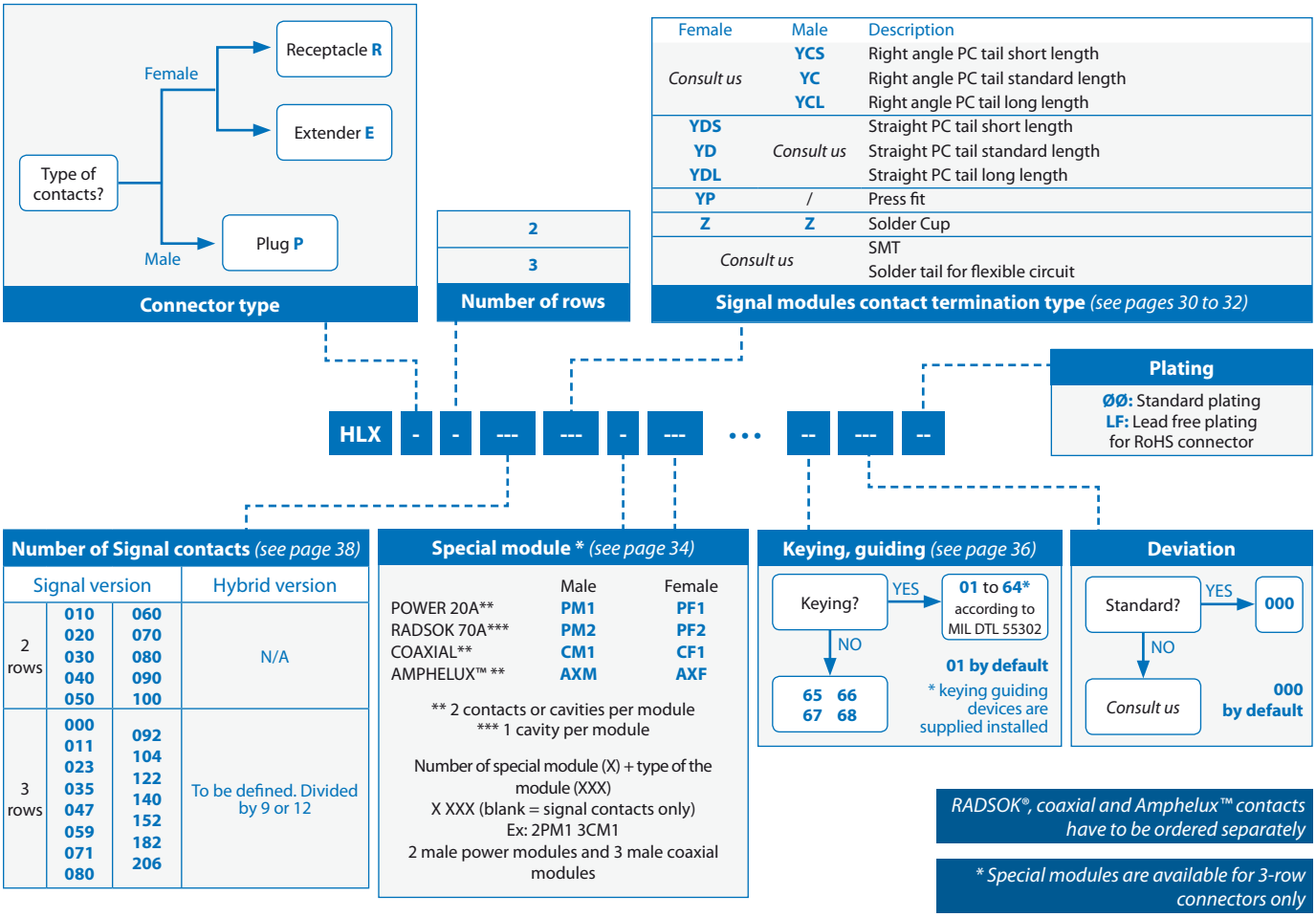
Markets

Standard

MIL-DTL-55302
/190 to /193

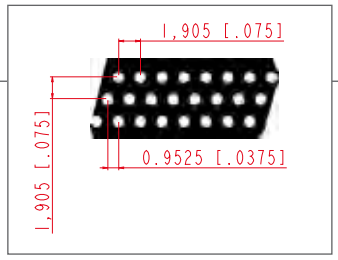
Main applications

How to order

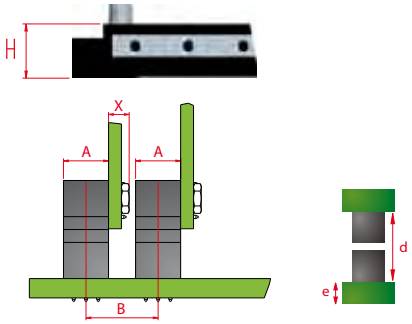


All dimensions are given for information only and are in mm [inch], except as otherwise specified

HILINX 1.905 >>> TECHNICAL SPECIFICATIONS



DIMENSIONAL CHARACTERISTICS



H = 7.62 $_{MAX}$ [.300]
A = 5.12 $_{MAX}$ [.202] for 2-row connectors
A = 7 $_{MAX}$ [.276] for 3-row connectors
B = 5.72 + X [.225 + X] for 2-row connectors
B = 7.6 + X [.300 + X] for 3-row connectors
X = Board thickness + hardware thickness
d = 15.24 $_{MAX}$ [.600]
e = 1.8 [.071] to 3.4 [.134] or 2.5 $_{MIN}$ [.098] (for YP contacts)

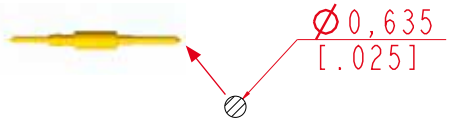
FEMALE CONTACT

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
- Hood: machined brass alloy
- Clip: CuBe[BeCu], stamped and formed

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

MALE CONTACT



- **Mating end diameter:** Ø 0.635 [.025]
- **Mating end section** (mating side): 0.32 mm² [.0005 in²]
- **Material:** brass alloy (machined)
- **Plating:** gold over nickel

MATERIALS

- **Guiding devices:** electroless nickel plating over brass CuZn or passivated stainless steel 303
- **Rails:** passivated stainless steel 316L
- **Plastic insert:** thermoplastic LCP, 30% glass-fiber filled

MECHANICAL CHARACTERISTICS	MIL DTL 55302 sections	
Backoff[1] (mm)	0.8 $_{MAX}$ [.031]	N/A
Mating force per contact (N)	0.85 $_{MAX}$	§ 4.5.3
Unmating force per contact (N)	0.35 < F < 0.85	§ 4.5.3
Durability cycles	500	§ 4.5.9
Sinusoidal vibrations (10 to 2000 Hz) micro discontinuity 2ns	15 g	§ 4.5.10
Random vibrations (5 to 2000 Hz) micro discontinuity 2ns	0.5 g² / Hz	§ 4.5.10
Shocks 6ms ½ sinus 2ns	100 g	§ 4.5.10
ENVIRONMENTAL CHARACTERISTICS		
Thermal shocks (°C)	-65 / +150	§ 4.5.13
Salt Spray (hours)	96	§ 4.5.11
Humidity		
Days	10	§ 4.5.15
Temperature (°C)	25/65	
Humidity rate (%)	90-95	
ELECTRICAL CHARACTERISTICS		
Current rating per contacts (A)	3*	§ 4.5.5
Insulation resistance (at 500Vdc) (GΩ)	5 $_{MIN}$	§ 4.5.8
Contact resistance (mΩ)	10 $_{MAX}$	§ 4.5.12
Dielectric Withstanding Voltage (Vrms)	750 $_{MIN}$	§ 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

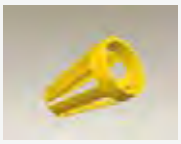
** Other, please consult us*

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

HILINX 1.905 >>> SIGNAL CONTACTS (1)

FEMALE CONTACTS FOR RECEPTACLES

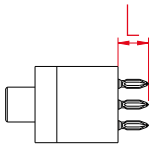
Starclip female technology



- 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 0.635 [.025]
- **Plating** on active part (clip)

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

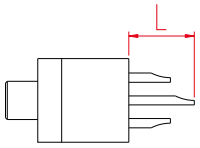
Press-fit



- Solderless assembly
- Mother board or mezzanine connection
- PCB thickness: 2.5 $_{MIN}$ [.098]
- Insertion forces: 65 N typical

Termination style	YP

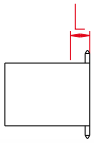
Solder cup*



- Hard soldering on wire
- Mother board for cable to board connection
- Solder cup for 24 to 28 AWG wire

Consult us	Z

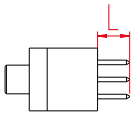
SMT*



- SMT soldering
- PCB thickness: specific, *consult us*

Consult us	T

Soldering on flex*



- Hard soldering on flexible circuit
- PCB thickness: specific, *consult us*

Consult us	Y

	YP	Z*	T*	Y*
L $_{MAX}$	2.8 ± 0.2 [.110 ± .008]	5.5 ± 0.2 [.217 ± .008]	1.85 [.073]	2.4 ± 0.2 [.094 ± .008]
Termination section	Ø 0.82 [.032]	Ø 0.75 $_{MAX}$ [.030]	Ø 0.51 $_{MAX}$ [.020]	
Barrel standard termination plating µm [µin]	2 [.079] Ni electrolytic + 15.2 [.598] Ni electroless + 10 [.394] Sn Pb	3 [.118] Ni + 10 [.394] Sn Pb		
Barrel RoHS termination plating* µm [µin]	N/A	2.5 [.089] Ni + 5 [.197] bright pure Sn		

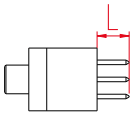
** Consult us*

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

HILINX 1.905 >>> SIGNAL CONTACTS (❶)

FEMALE CONTACTS FOR RECEPTACLES

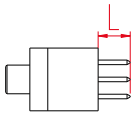
Short straight PC tail



- Thru hole soldering
- Mother board or mezzanine connection
- PCB thickness: 1.8 $_{MAX}$ [.071]

Termination style	YDS

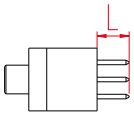
Standard straight PC tail



- Thru hole soldering
- Mother board or mezzanine connection
- PCB thickness: 2.5 $_{MAX}$ [.098]

Termination style	YD

Long straight PC tail



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

Termination style	YDL

Short right angle PC tail*

- Thru hole soldering
- Extender card
- PCB thickness: *consult us*

Consult us	YCS

Standard right angle PC tail*

- Thru hole soldering
- Extender card
- PCB thickness: *consult us*

Consult us	YC

Long right angle PC tail*

- Thru hole soldering
- Extender card
- PCB thickness: *consult us*

Consult us	YCL

	YDS	YD	YDL	YCS*	YC*	YCL*
L $_{MAX}$	2.8 ± 0.2 [.110 ± .008]	3.5 ± 0.2 [.140 ± .008]	4.4 ± 0.2 [.172 ± .008]	*Consult us*		
Termination section	Ø 0.51 $_{MAX}$ [.020]					
Barrel standard termination plating µm [µin]	3 [.118] Ni + 10 [.394] Sn Pb					
Barrel RoHS termination plating* µm [µin]	2.5 [.089] Ni + 6 [.197] bright pure Sn					

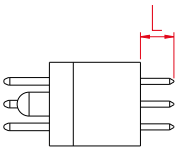
** Consult us*

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

HILINX 1.905 >>> SIGNAL CONTACTS (❶)

MALE CONTACTS FOR PLUGS

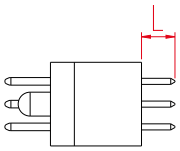
Short straight PC tail*



- Thru hole soldering
- Daughter board or mezzanine connection
- PCB thickness: 1.8 $_{MAX}$ [.071]

Consult us | **YDS**

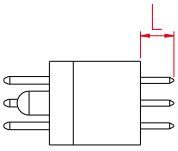
Standard straight PC tail*



- Thru hole soldering
- Daughter board or mezzanine connection
- PCB thickness: 2.5 $_{MAX}$ [.098]

Consult us | **YD**

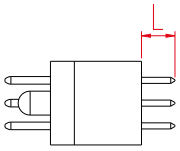
Long straight PC tail*



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

Consult us | **YDL**

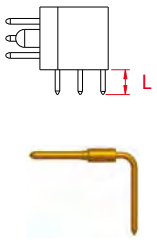
Soldering on flex*



- Hard soldering on flexible circuit
- SMT connection
- PCB thickness: *consult us*

Consult us | **Y**

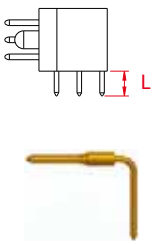
Short right angle PC tail



- Thru hole soldering
- Daughter board or extender card
- PCB thickness: 1.8 $_{MAX}$ [.071]

Termination style | **YCS**

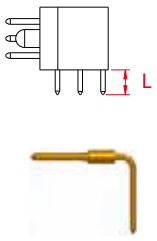
Standard right angle PC tail



- Thru hole soldering
- Daughter board or extender card
- PCB thickness: 2.5 $_{MAX}$ [.098]

Termination style | **YC**

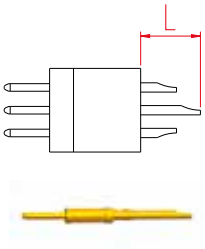
Long right angle PC tail



- Thru hole soldering
- Daughter board or extender card
- PCB thickness: 3.5 $_{MAX}$ [.138]

Termination style | **YCL**

Solder cup*



- Hard soldering on wire
- Daughter board for cable to board connection
- Solder cup for 24 to 28 AWG wire

Consult us | **Z**

	YDS*	YD*	YDL*	Y*	YCS	YC	YCL	Z*
L $_{MAX}$	2.8 ± 0.2 [.110 ± .008]	3.5 ± 0.2 [.140 ± .008]	4.4 ± 0.2 [.172 ± .008]	2.4 ± 0.2 [.094 ± .008]	2.8 ± 0.2 [.110 ± .008]	3.5 ± 0.2 [.140 ± .008]	4.4 ± 0.2 [.173 ± .008]	5 $_{MAX}$ ± 0.2 [.197 ± .008]
Termination section	Ø 0.51 $_{MAX}$ [.020]							Ø 0.8 $_{MAX}$ [.032]
Mating end diameter	Ø 0.635 ± 0.02 [.025 ± .001]							
Plating µm [µin]	1 [.039] Cu + 3.5 [.138] Ni + **1.3 [.051] Au**							

** Consult us*

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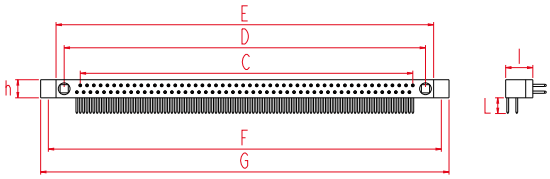
HILINX [1.905] >>> SIGNAL VERSION ONLY

MIL-DTL-55302
/190 to /193

COMPATIBILITY WITH THE MIL DTL 55302 /190 TO /193 DETAILED SHEETS

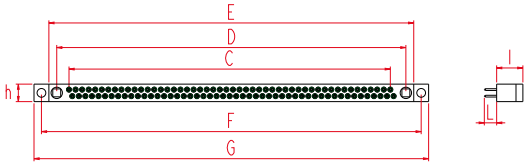
2 rows / 100 signal contacts

Plug: withYCS / YC / YCL contacts



HLX P 2 100 YCS xx – 000
HLX P 2 100 YC xx – 000
HLX P 2 100 YCL xx – 000

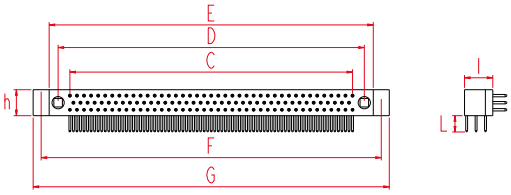
Receptacle: with YDS / YD / YDL contacts



HLX P 2 100 YCS xx – 000
HLX P 2 100 YC xx – 000
HLX P 2 100 YCL xx – 000

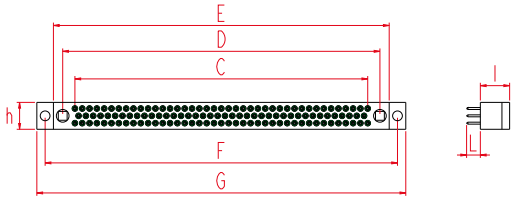
3 rows / 122 signal contacts

Plug: withYCS / YC / YCL contacts



HLX P 2 122 YCS xx – 000
HLX P 2 122 YC xx – 000
HLX P 2 122 YCL xx – 000

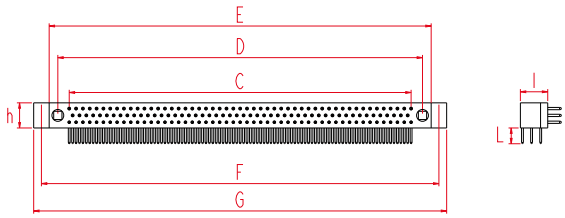
Receptacle: with YDS / YD / YDL contacts



HLX P 2 122 YCS xx – 000
HLX P 2 122 YC xx – 000
HLX P 2 122 YCL xx – 000

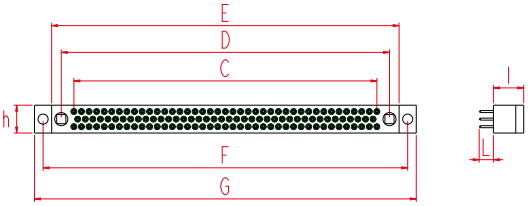
3 rows / 152 signal contacts

Plug: withYCS / YC / YCL contacts



HLX P 2 152 YCS xx – 000
HLX P 2 152 YC xx – 000
HLX P 2 152 YCL xx – 000

Receptacle: with YDS / YD / YDL contacts



HLX P 2 152 YCS xx – 000
HLX P 2 152 YC xx – 000
HLX P 2 152 YCL xx – 000

	2 rows 100 cts YCS/YC/YCL	2 rows 100 cts YDS/YD/YDL	3 rows 122 cts YCS/YC/YCL	3 rows 122 cts YDS/YD/YDL	3 rows 152 cts YCS/YC/YCL	3 rows 152 cts YDS/YD/YDL
C	93.35 [3.675]		76.20 [3.000]		95.25 [3.750]	
D	101.40 [3.992]		82.55 [3.250]		101.60 [4.000]	
E	106.00 [4.173]		87.39 [3.441]		106.44 [4.191]	
F	110.29 [4.342]		91.68 [3.609]		110.73 [4.359]	
G	114.70 [4.516]		96.09 [3.783]		115.14 [4.533]	
h	5.12 [.202]		7 [.276]			
I	7.62 [.300]					
L_{xxS}	2.8 ± 0.2 [.110 ± .008]					
L_{xx}	3.5 ± 0.2 [.140 ± .008]					
L_{xxL}	4.4 ± 0.2 [.172 ± .008]					

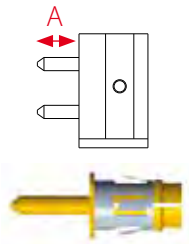
All dimensions are given for information only and are in mm [inch], except as otherwise specified

HILINX 1.905 >>> SPECIAL CONTACTS (❷)

HYBRID MODULES FOR 3-ROW CONNECTORS*

POWER contacts

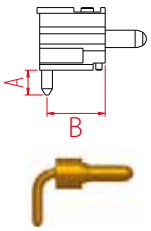
Straight female power module



- Thru hole soldering
- Mother board
- 2 straight female contacts
- 20A / contact
- PCB thickness: 1.8 [.071] to 3.4 [.134]
- Termination section Ø 1.4 $_{MAX}$ [.055]

Module designation	PF1

Right angle male power module

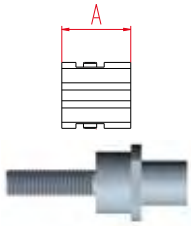


- Thru hole soldering
- Daughter board
- 2 right angle male contacts
- 20A / contact
- PCB thickness: 1.8 [.071] to 3.4 [.134]
- Termination section: Ø 1.2 $_{MAX}$ [.047]

Module designation	PM1

RADSOK® contacts

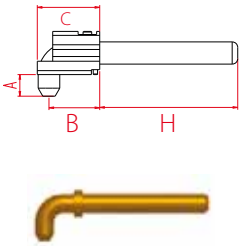
Female cavity module for RADSOK® contact



- 1 cavity for male RADSOK® contact
- Mother board
- 70A / contact
- Termination section: the body shape, the section and the length of the termination are specific to your need: *consult us*

Module designation	PF2

Right angle male RADSOK® contact

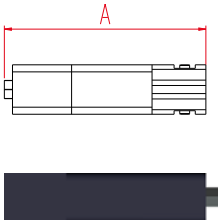


- Fixing with retainer
- Daughter board
- 1 male RADSOK® contact
- 70A / contact
- H: the body shape, the section and the length of the termination are specific to your need: *consult us*

Module designation	PM2

AMPHELUX™ ARINC 801 termini

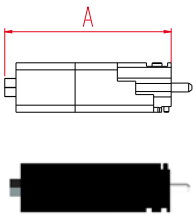
Female amphelux™ module



- 2 amphelux™ termini
- Multimode
- Modules are supplied less contacts, *consult us*
- Complied with the ARINC 801 specification
- Keyed to provide anti-rotation

Module designation	AXF

Male amphelux™ module



- 2 amphelux™ termini
- Multimode
- Modules are supplied less contacts, *consult us*
- Complied with the ARINC 801 specification
- Keyed to provide anti-rotation

Module designation	AXM

	PF1	PF2	PM1	PM2	AXF	AXM
A	4.1 ± 0.2 [.161 ± .008]	7.62 $_{MAX}$ [.300]	2.8 ± 0.2 [.110 ± .008] 3.5 ± 0.2 [.140 ± .008] 4.4 ± 0.2 [.172 ± .008]		28.5 ± 0.2 [1.122 ± .008]	23.6 ± 0.2 [.929 ± .008]
B			6.5 [.256]	8.23 [.324]		
C				10.1 $_{MAX}$ [.398]		

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

HILINX 1.905 >>> SPECIAL CONTACTS (❷)

HYBRID MODULES FOR 3-ROW CONNECTORS*

COAXIAL contacts

Straight female coaxial module

- Thru hole soldering
- Mother board or mezzanine connection
- 2 cavities for straight coaxial female contacts
- For more information, *consult us*
- Modules are supplied less contacts

Module designation	CF1	F041

Straight male coaxial module

- Thru hole soldering
- Mezzanine connection
- 2 cavities for straight coaxial male contacts
- For more information, *consult us*
- Modules are supplied less contacts

Module designation	CF1	M041

Right angle female coaxial module

- Thru hole soldering
- Extended card
- 2 cavities for right angle coaxial female contacts
- For more information, *consult us*
- Modules are supplied less contacts

Module designation	CM1	F032

Right angle male coaxial module

- Thru hole soldering
- Daughter board or extended card
- 2 cavities for right angle coaxial male contacts
- For more information, *consult us*
- Modules are supplied less contacts

Module designation	CM1	M032

	TECHNICAL CHARACTERISTICS
Impedance (Ω)	50
Voltage rating (V_{RMS})	180
Current rating (mA)	500
Contact retention (N)	50_{MIN}
Frequency range (GHz)	0 to 1
Contact resistance (mΩ)	12_{MAX}
SWR (at 1 GHz)	1.3
Insertion and extraction force per contact (N)	1 ≤ F ≤ 15

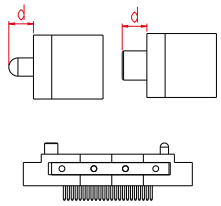
** Hybrid modules will be preferably positioned on the connector sides*

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

HILINX 1.905 >>> KEYING & GUIDING (❸)

NON KEYING GUIDES

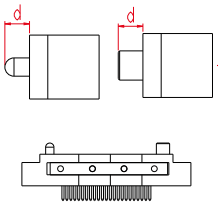
65



- 1 female socket and 1 male pin
- Non keying
- For plug or receptacle
- Passivated stainless steel

HLX - - --- --- **65** ---

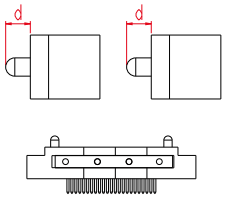
66



- 1 male pin and 1 female socket
- Non keying
- For plug or receptacle
- Passivated stainless steel

HLX - - --- --- **66** ---

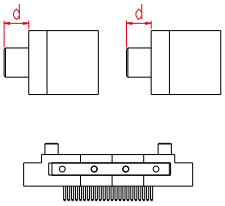
67



- 2 male guide pins
- Non keying
- For plug or receptacle
- Passivated stainless steel

HLX - - --- --- **67** ---

68

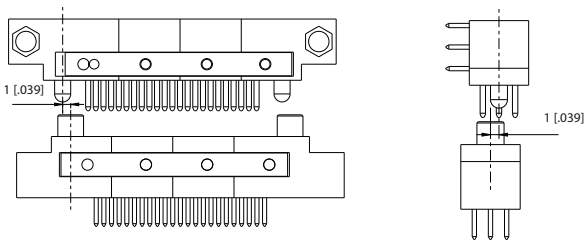


- 2 female guide sockets
- Non keying
- For plug or receptacle
- Passivated stainless steel

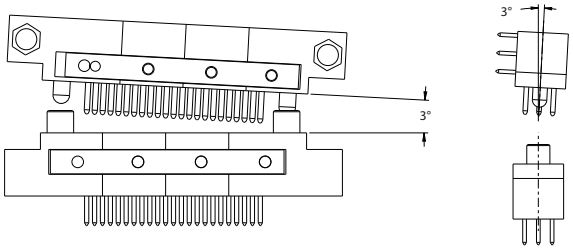
HLX - - --- --- **68** ---

REALIGNMENT CAPABILITY

In the longitudinal axis	In the lateral axis

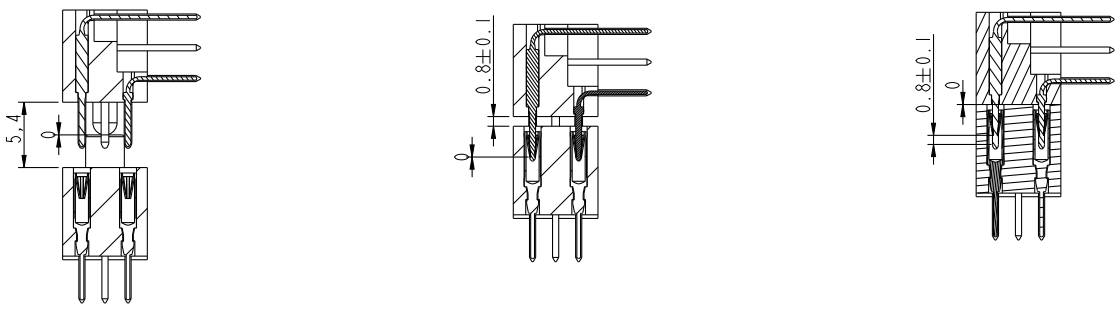


In the longitudinal axis	In the lateral axis



MATING SEQUENCE

Guiding	Signal contact	Mated connector



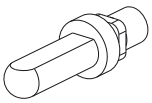
5.4 [.213]	0.8 ± 0.1 [.031 ± .004]	0 [0]

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

HILINX 1.905 >>> KEYING & GUIDING (❸)

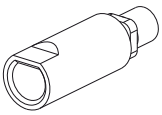
KEYING GUIDES

D shaped male guide pin



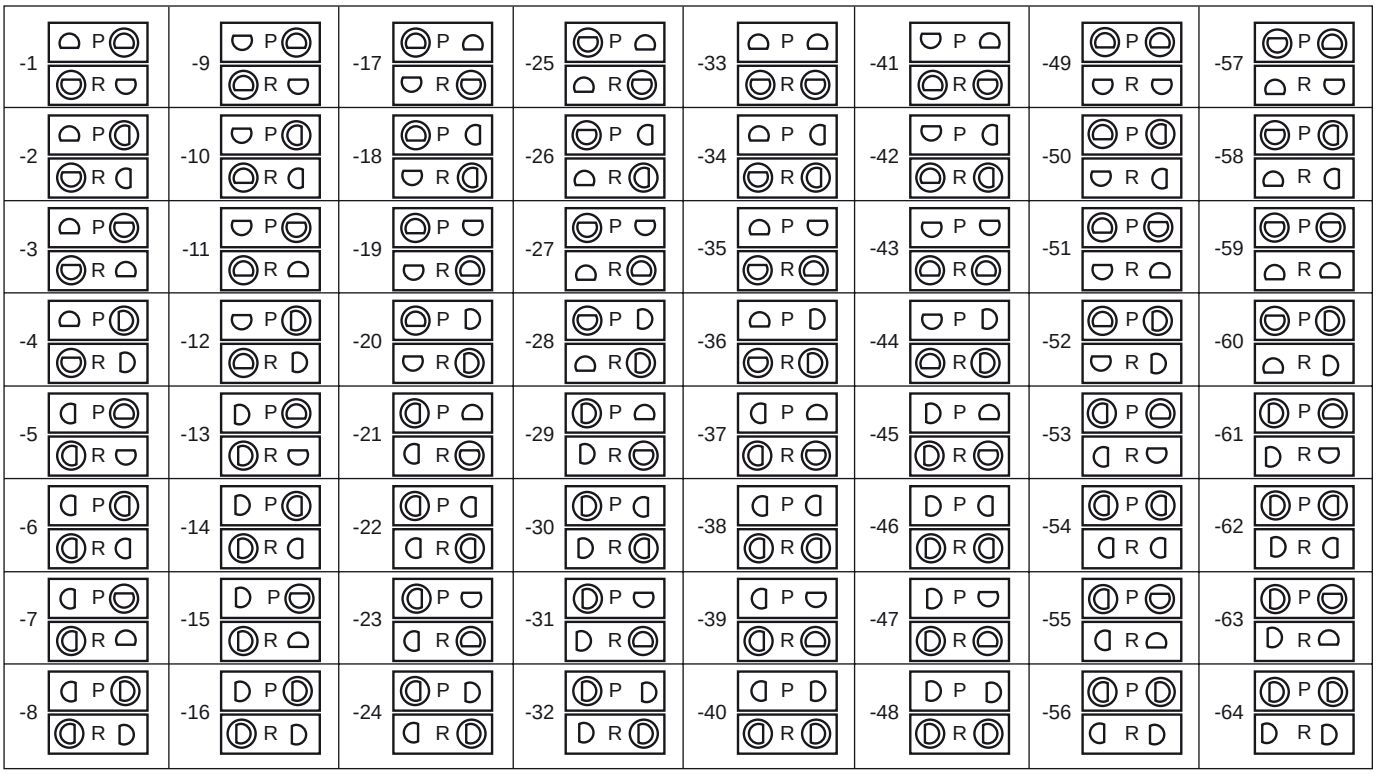
- 4 keying possibilities
- Realignment capability: 1 [.039]
- For plug or receptacle
- Electroless nickel over brass

D shaped female guide socket



- 4 keying possibilities
- Realignment capability: 1 [.039]
- For plug or receptacle
- Electroless nickel over brass

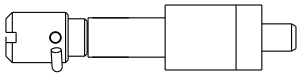
CONNECTOR POLARIZATION WITH 'D' SHAPED GUIDE PINS AND SOCKETS



	Non keying male pin guide	Non keying female socket guide	Keying male pin guide	Keying female socket guide
d	2.7 ± 0.2 [.106 ± .008]			

SPECIAL KEYING CAPABILITIES

Jackset-Jackscrew-Jacksocket



- Turning jackset / Reversed turning jackset
- Turning jackscrew
- Turning jacksocket

Consult us	**73 to 76** **81 to 92**

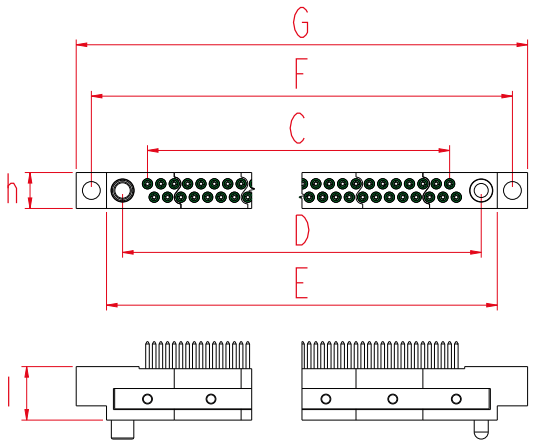
All dimensions are given for information only and are in mm [inch], except as otherwise specified

HILINX 1.905 >>> SIGNAL CONTACT VERSION (❹)

TYPICAL ARRANGEMENTS 2 & 3 ROWS

n indicates the total number of signal contacts.

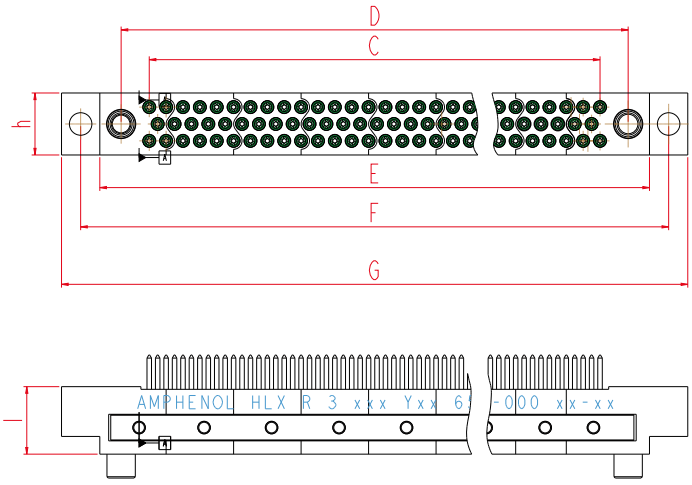
Signal contacts on 2 rows*, from 10 to 100 contacts*



n = 10, 20, 30, 40, 50, 60, 70, 80, 90 or100

C	n x 0.9525 - 1.905
D	C + 8.0525
E	D + 4.6
F	E + 4.29
G	F + 4.41
h	5.12
I	7.62

Signal contacts on 3 rows from 11 to 206 contacts*



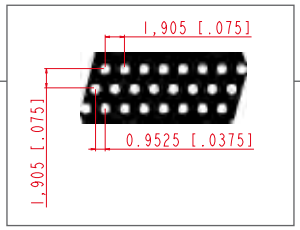
n = 011, 023, 035, 047, 059, 071, 080, 092, 104, 122, 140, 152, 182 or 206

C	n x 0.635 - 1.27
D	C + 6.35
E	D + 4.84
F	E + 4.29
G	F + 4.41
h	7
I	7.62

** in mm: 1mm = 0.03937 inch*

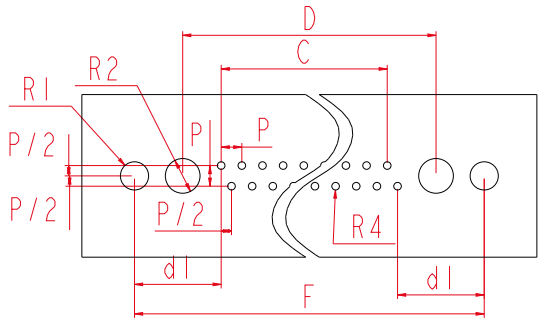
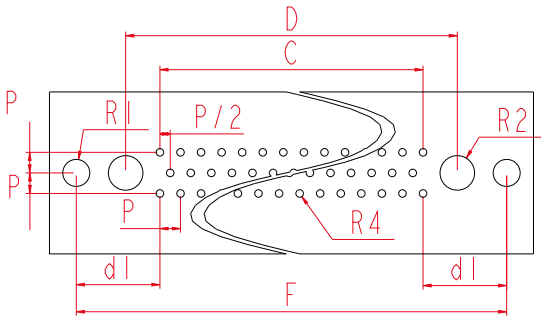
All dimensions are given for information only and are in mm [inch], except as otherwise specified

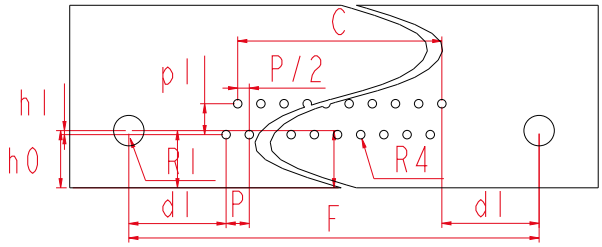
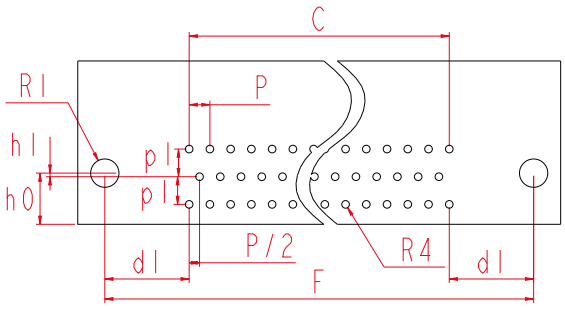
HILINX 1.905 >>> SIGNAL CONTACT VERSION (❹)



LAYOUTS 2 & 3 ROWS

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

n	YD/YDS/YDL & YP CONTACT (female for receptacle)*	
2 ROWS FROM 10 TO 100 CONTACTS		n = 10, 20, 30, 40, 50, 60, 70, 80, 90 or100 C: n x 0.9525 - 1.905 F: C + 16.9425
3 ROWS FROM 11 TO 206 CONTACTS		n = 011, 023, 035, 047, 059, 071, 080, 092, 104, 122, 140, 152, 182 or 206 C: n x 0.635 - 1.27 F: C + 15.48

n	YC/YCS/YCL CONTACT (male for plug)*	
2 ROWS FROM 10 TO 100 CONTACTS		n = 10, 20, 30, 40, 50, 60, 70, 80, 90 or100 C: n x 0.635 - 1.27 F: C + 16.9425
3 ROWS FROM 11 TO 206 CONTACTS		n = 011, 023, 035, 047, 059, 071, 080, 092, 104, 122, 140, 152, 182 or 206 C: n x 0.635 - 1.27 F: C + 15.48

R_1	R_2	R_4	d_1	d'_1	p	p / 2	p_1	h_0	h_1
2.8 [.110]	Not complusory 3.75 ± 0.1 [.148 ± .004]	0.65 MIN [.026]	8 [.315]	7.747 [.305]	1.905 [.075]	0.9525 [.037]	2.54 [.100]	4.7 MAX [.185]	0.32 [.013]

** in mm: 1mm = 0.03937 inch*

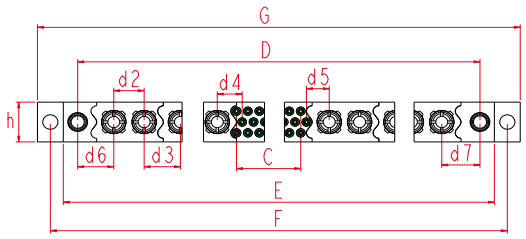
All dimensions are given for information only and are in mm [inch], except as otherwise specified

HILINX 1.905 >>> HYBRID VERSION (❹)

DIMENSIONS 3 ROWS**

s indicates the total number of special contacts.
n indicates the total number of signal contacts.

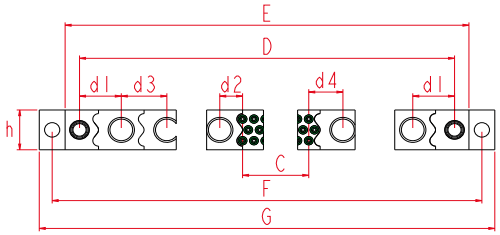
Power contacts 20A*



s = 2, 4, 6…

C	0,635 * n - 1,27
D	6,985 + s*5,575 + n*0,635
E	D + 4,84
F	E + 4,29
G	F + 4,41
d2	5,08
d3	6,07
d4	4,1625
d5	3,81
d6	6,032
d7	6,39
h	7

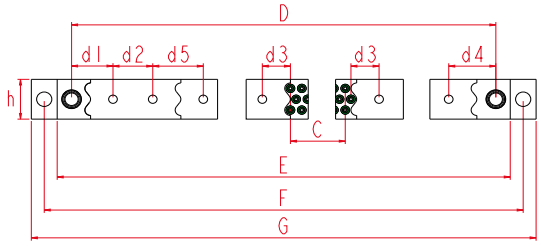
RADSOK® contacts 70A*



s = 1, 2, 3,…

C	0,635 * n - 1,27
D	6,985 + s*7,62 + n*0,635
E	D + 4,84
F	E + 4,29
G	F + 4,41
h	7
d1	6,985
d2	3,81
d3	7,62
d4	5,7155

AMPHELUX™ contacts*



s = 2, 4, 6…

C	0,635 * n - 1,27
D	6,985 + s*7,55 + n*0,635
E	D + 4,84
F	E + 4,29
G	F + 4,41
h	7
d1	6,924
d2	6,65
d3	4,702
d4	7,876
d5	8,45

Coaxial contacts

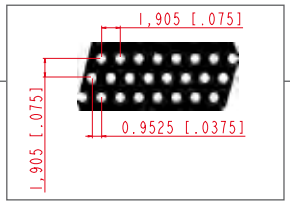
Please consult us

** in mm: 1mm = 0.03937 inch*

*** Hybrid modules will be preferably positioned on the connector sides*

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

HILINX 1.905 >>> HYBRID VERSION (❹)

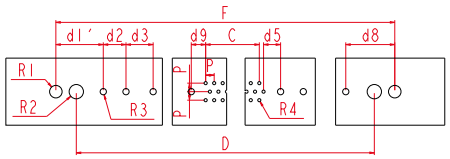


LAYOUTS 3 ROWS**

The boards are illustrated from the connector side
All contacts outputs are equidistant.

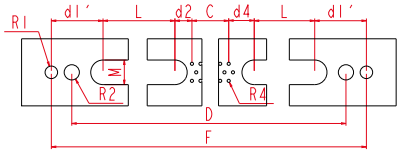
With YDS/YD/YDL & YP CONTACT (female for receptacle)*

WITH POWER CONTACT 20A



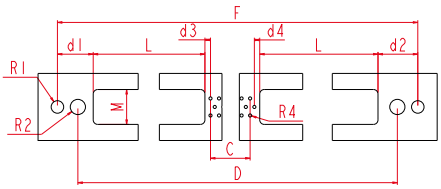
C	0.635 x n - 1.27
D	6.985 + n x 0.635 + s x 5.575
F	D + 9.13

WITH RADSOK® CONTACT 70A



C	0.635 x n - 1.27
D	6.985 + n x 0.635 + s x 7.62
F	D + 9.13
L	(s - 1) x 7.62
M	6.5 ± 0.1

WITH AMPHELUX™ CONTACT

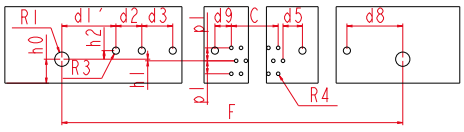


C	0.635 x n - 1.27
D	6.985 + n x 0.635 + s x 7.55
F	D + 9.13
L	(s - 2) x 7.55
M	7.8 ± 0.1

YDS/YD/YDL YP	d1	d'1	d2	d3	d4	d5	d8	d9	p	R1	R2	R3	R4
Power		10.605 [.418]	5.080 [.200]	6.072 [.239]		3.810 [.150]	10.963 [.432]	3.210 [.126]	1.905 [.075]	2.8 ± 0.1 [.110 ± 0.004]	3.75 [.148]	1.5 MIN [.059 MIN]	0.65 MIN [.026 MIN]
RADSOK®		11.557 [.455]	3.810 [.150]		7.620 [.300]								
Amphelux™	8 MAX [.315 MAX]		8.8 MAX [.346 MAX]	1.2 MAX [.047 MAX]	1.2 MAX [.047 MAX]								

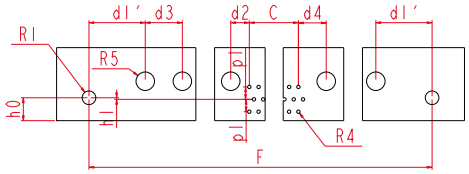
With YC/YCS/YCL CONTACT (male for plug)*

WITH POWER CONTACT 20A



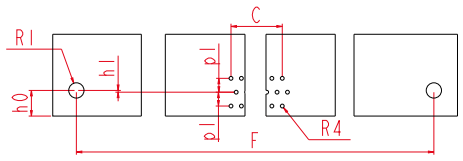
C	0.635 x n - 1.27
F	16.115 + n x 0.635 + s x 5.575

WITH RADSOK® CONTACT 70A



C	0.635 x n - 1.27
F	16.115 + n x 0.635 + s x 7.62

WITH AMPHELUX™ CONTACT



C	0.635 x n - 1.27
F	16.115 + n x 0.635 + s x 7.55

YCS/YC/YCL	h0	h1	h2	d'1	d2	d3	d4	d5	d8	d9	p1	R1	R3	R4	R5
Power	4.7 MAX [.185 MAX]	0.320 [.013]	1.680 [.066]	10.605 [.418]	5.080 [.200]	6.072 [.239]	x	3.810 [.150]	10.963 [.432]	3.210 [.126]	2.540 [.100]	2.8 ± 0.1 [.110 ± 0.004]	1.5 MIN [.059 MIN]	0.65 MIN [.026 MIN]	
RADSOK®				11.557 [.455]	3.810 [.150]	4.763 [.187]	7.620 [.300]								3.8 MIN [.150 MIN]
Amphelux™															

** in mm: 1mm = 0.03937 inch*

*** Hybrid modules will be preferably positioned on the connector sides*

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

HILINX >>> TOOLING

TOOLING

HLX ODP

- Screw driver for guiding devices

Part number	HLX ODP

23550

- Removal tool
- For coaxial contacts
- Rear release
- HiLinX 2.54

Part number	23550

NOTES

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

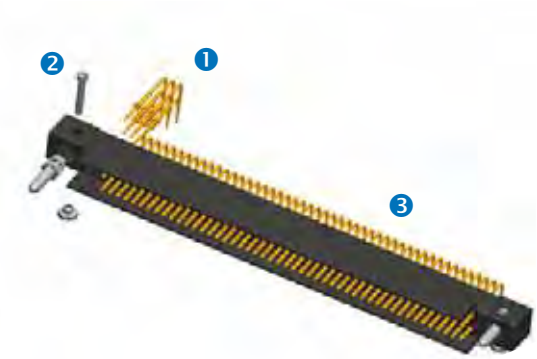
The press-fit technology allows significant assembly cost reduction on the backplane while ensuring an extreme reliability, even for the thickest motherboards. No more solder joints, pre-baking, or cleaning.

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*

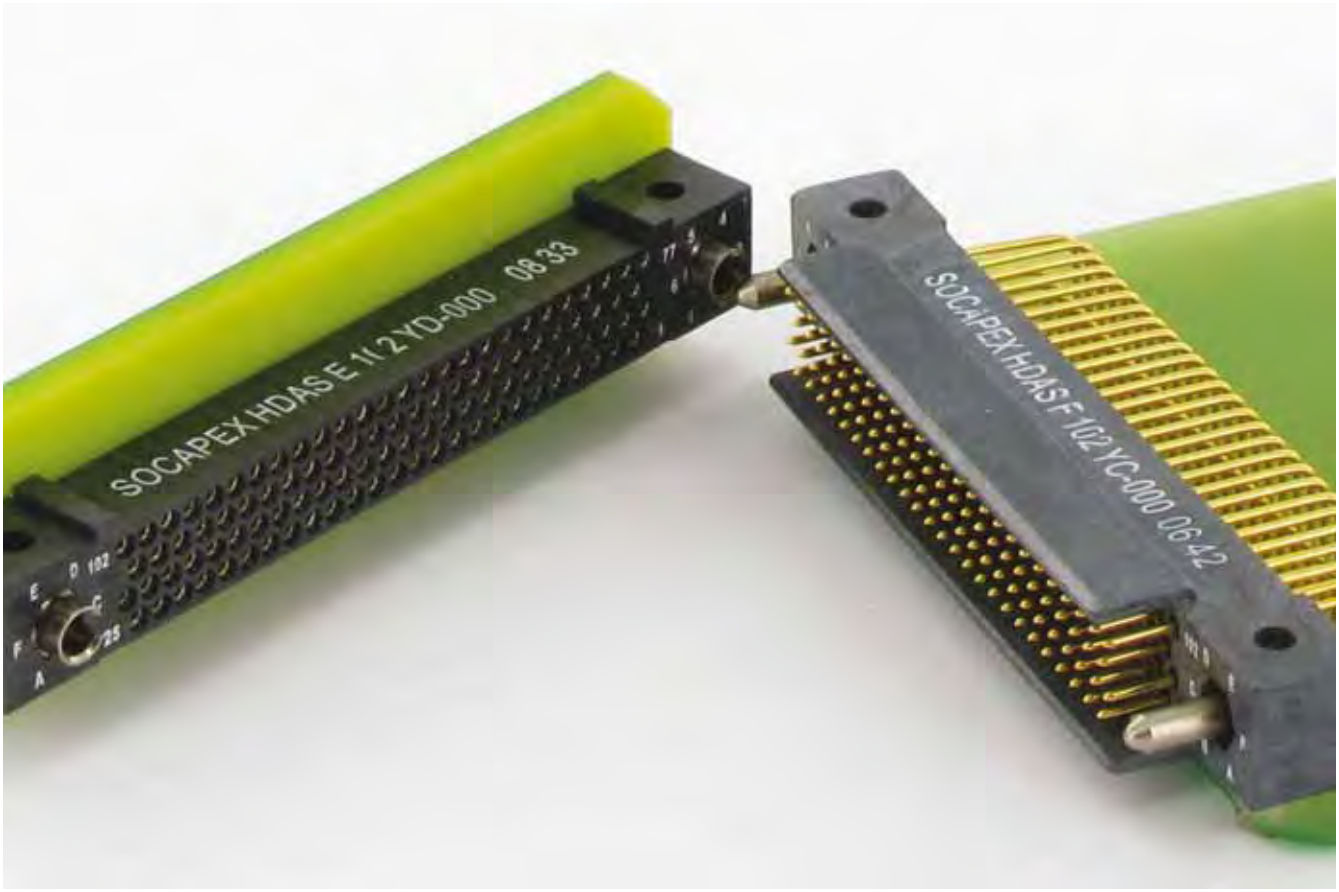
PAGE 52

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

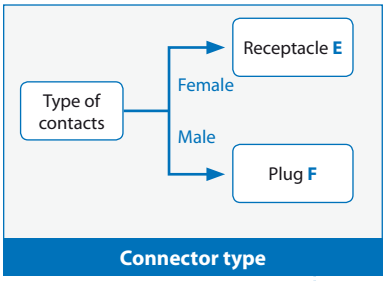
Main characteristics

- 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

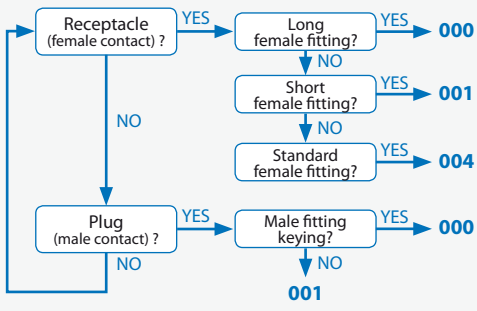
Signal contacts (see pages 48 to 49)

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

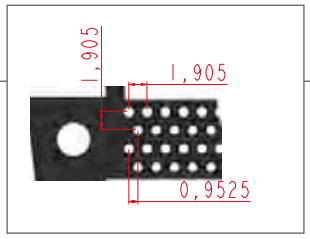
Ø: Tin lead plating on female terminations (YD, YDS, YP)

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

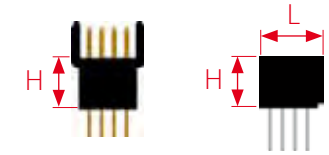
* *Consult us*

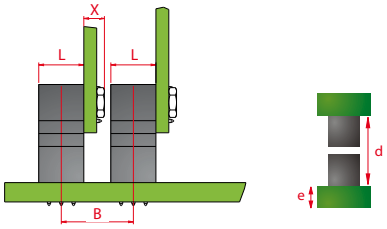
All dimensions are given for information only and are in mm [inch], except as otherwise specified

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]

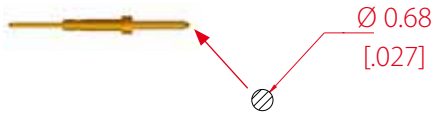
FEMALE CONTACT

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



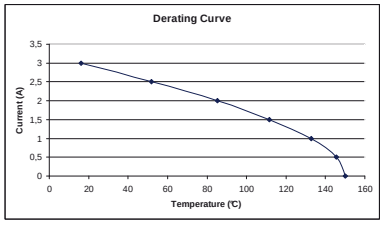
- **Mating end diameter:** Ø 0.68 [.027]
- **Contact section** (mating side): 0.36 mm² [.0006 inch²]
- **Material:** brass alloy (machined)
- **Plating:** gold over nickel

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 **Random vibrations** (600 to 700 Hz) micro discontinuity 2ns **Shocks** micro discontinuity 2ns	15 g 2.682g² / Hz 100 g	§ 4.5.10 § 4.5.10 § 4.5.10
Recommanded tightening torques - nuts for Ø 2.5mm screws, brass (m.N) - nuts for Ø 1.6mm screws, brass (m.N)	 0.25 0.15	 N/A N/A
ENVIRONMENTAL CHARACTERISTICS		
Thermal shocks (°C)	-65 / +150	§ 4.5.13
Salt Spray (hours)	96	§ 4.5.11
Humidity Days Temperature (°C) Humidity rate (%)	 10 25 / 65 90-95	§ 4.5.15
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

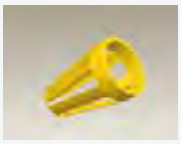


All dimensions are given for information only and are in mm [inch], except as otherwise specified

HDAS >>> SIGNAL CONTACTS (❶)

FEMALE CONTACTS FOR RECEPTACLES

Starclip female technology



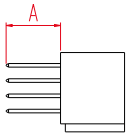
- 6 contact tines instead of 4
- Excellent mechanical and electrical reliability
- Better resistance to high vibrations
- Improved electrical conductivity
- 100% compatible with other connectors

- 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

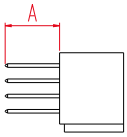
Standard straight PC tail



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

Termination style	**YD**

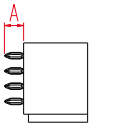
Short straight PC tail



- 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		

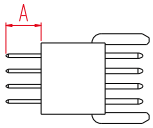
** Consult us*

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

HDAS >>> SIGNAL CONTACTS (❶)

MALE CONTACTS FOR PLUGS

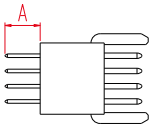
Standard straight PC tail



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

Termination style	YD

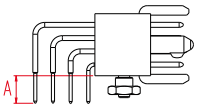
Short straight PC tail



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

Termination style	YDS

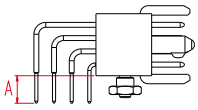
Standard right angle PC tail



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

Termination style	YC

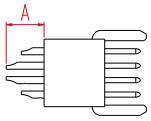
Short right angle PC tail



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

Termination style	YCS

Solder cup



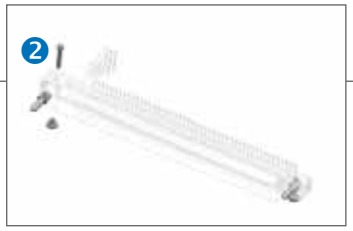
- Hard-soldering on wire
- AWG gauge 26 to 22

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

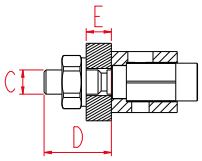
HDAS >>> KEYING & GUIDING (❷)



FEMALE FITTINGS FOR RECEPTACLES

Keying/guiding & non-locking

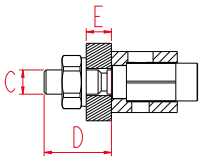
000 style - For YD/YDS/YP female contacts



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

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

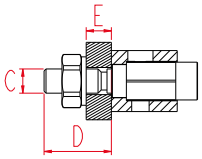
001 style - For YD/YDS/YP female contacts



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

HDAS E --- YDS **001**
HDAS E --- YD **001**
HDAS E --- YP **001**

004 style - For YD/YDS/YP female contacts



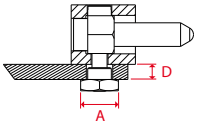
- Intermediate female fitting
- Chassis or mother board
- Fixed receptacle
- Nickel over brass

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

MALE FITTINGS FOR PLUGS

Guiding only

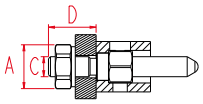
002 style - For YC/YCS male contacts



- Daughter board
- Free plug
- Nickel over brass

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

002 style - For YD/YDS male contacts

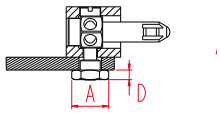


- Daughter board or mezzanine connection
- Nickel over brass

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

Keying & guiding

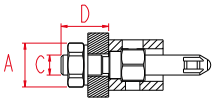
000 style - For YC/YCS male contacts



- 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



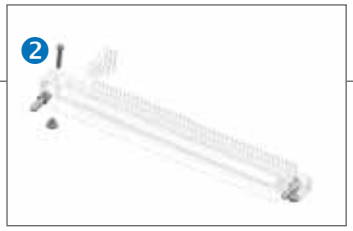
- Daughter board or mezzanine connection
- 6 keying positions
- Nickel over brass

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

	Female fittings			Male fittings			
	000 style for YD / YDS / YP female contacts	**001 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]	3 ± 0.2 [.118 ± .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	D -2.8				

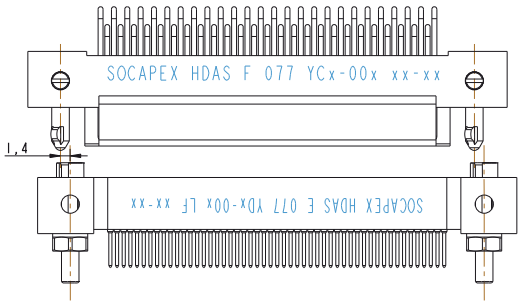
All dimensions are given for information only and are in mm [inch], except as otherwise specified

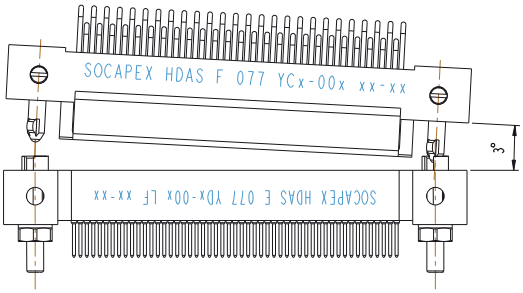
HDAS >>> KEYING & GUIDING (❷)



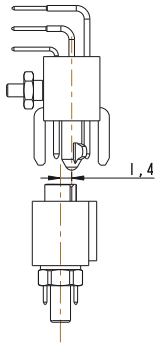
REALIGNMENT CAPABILITY

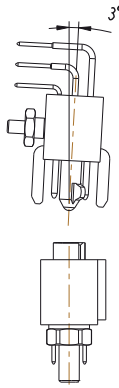
In the longitudinal axis



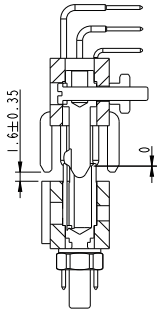
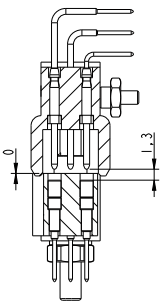
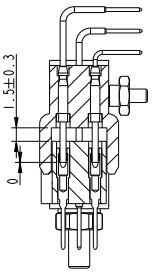
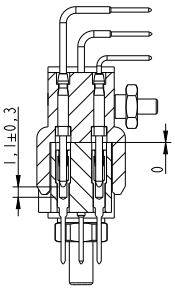


In the lateral axis





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]

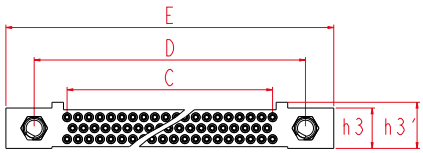
HDAS >>> 3 & 4 ROWS (❸)

TYPICAL ARRANGEMENTS 3 & 4 ROWS

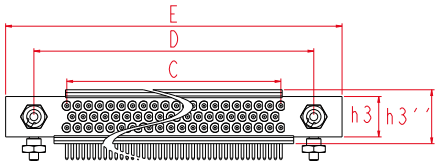
n is the total number of signal contacts.
r is the total number of rows.

Signal contacts on 3 rows*

receptacle



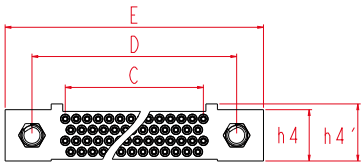
plug



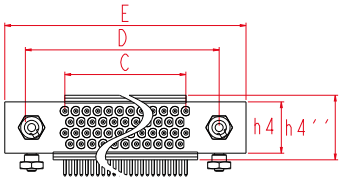
n	50, 77, 119	152
C	(n – 2) x 0.635	
D	C + 11.43	
E	D + 9.325	D + 9.82
h_3	7.01 $_{MAX}$ [.276]	
h_3'	8.21 $_{MAX}$ [.323]	
h_3''	9.36 $_{MAX}$ [.369]	

Signal contacts on 4 rows*

receptacle



plug

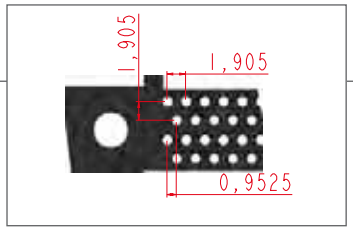


n	102	202
C	(n – 2) x 0.47625	
D	C + 11.555	C + 11.43
E	D + 9.325	D + 9.82
h_4	8.91 $_{MAX}$ [.351]	
h_4'	10.11 $_{MAX}$ [.398]	
h_4''	11.26 $_{MAX}$ [.443]	

*in mm: 1mm = 0.03937 inch

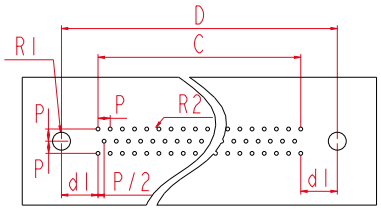
All dimensions are given for information only and are in mm [inch], except as otherwise specified

HDAS >>> 3 & 4 ROWS (❸)

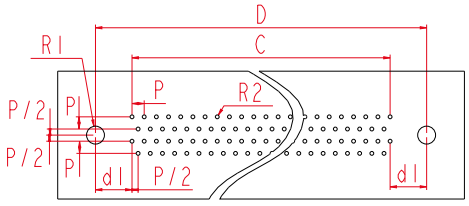


LAYOUTS 3 & 4 ROWS

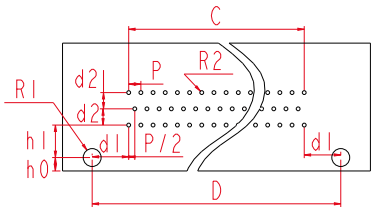
The boards are shown from the connector side.
All contact outputs are equidistant.

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

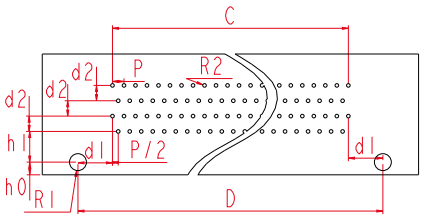
n	50, 77, 119	152
C	(n – 2) x 0.635	
D	C + 11.43	

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

	YC/YCS CONTACT (male for plug)*
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

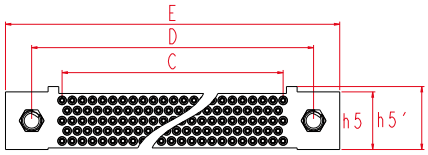
HDAS >>> 5 & 6 ROWS (❸)

TYPICAL ARRANGEMENTS 5 & 6 ROWS

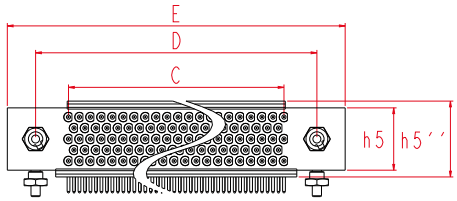
n is the total number of signal contacts.
r is the total number of rows.

Signal contacts on 5 rows

receptacle



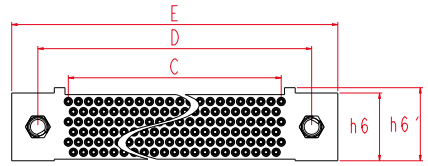
plug



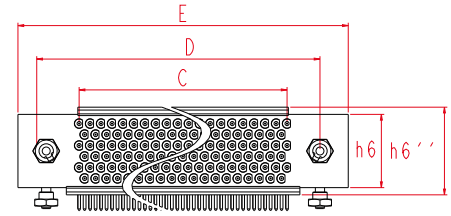
n	253
C	95.25 [3.750]
D	106.68 [4.200]
E	116.5 $_{MAX}$ [4.587]
h_5	10.82 $_{MAX}$ [.426]
h_5'	12.02 $_{MAX}$ [.473]
h_5''	13.17 $_{MAX}$ [.519]

Signal contacts on 6 rows

receptacle

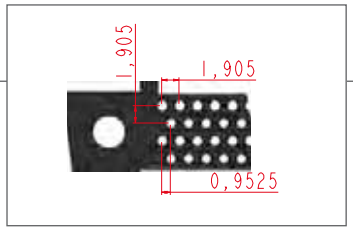


plug



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)

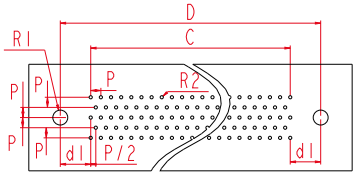


LAYOUTS 5 & 6 ROWS

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

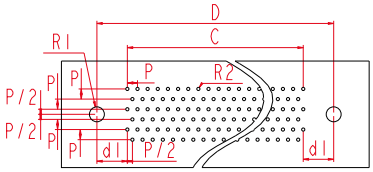
n	YD/YDS CONTACT (male and female for plug and receptacle) YP CONTACT (female for receptacle)

253 5 rows



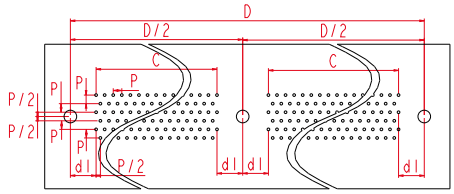
n	253
C	95.25 [3.750]
D	106.68 [4.200]

303 6 rows



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

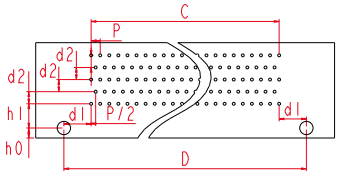
402 6 rows



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

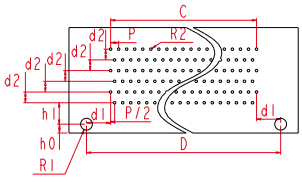
	YC/YCS CONTACT (male for plug)

253 5 rows



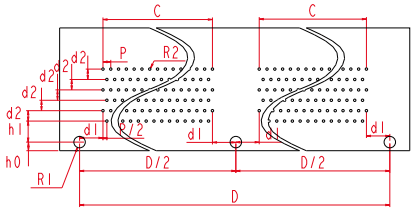
n	253
C	95.25 [3.750]
D	106.68 [4.200]

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]

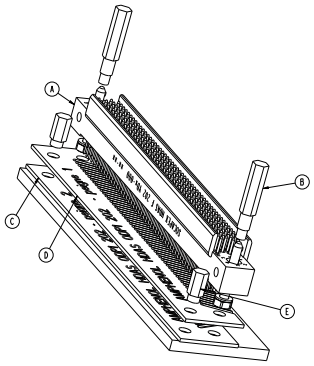
h_0	h_1	d_2	p	p/2	d1	R_1	R_2
2.1 MAXI [.083]	5.08 [.2]	2.54 [.1]	1.905 [.075]	0.9525 [.0375]	5.715 [.225]	Ø $2.8^{+0.1}_{0}$ [.110 $^{+.004}_{0}$]	Ø 0.6 MIN [.024] with metallization Ø 0.6 ± 0.05 for YP contacts [Ø.024 ± .002]

in mm: 1mm = 0.03937 inch

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

HDAS >>> TOOLING

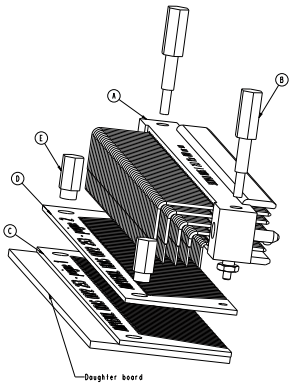
MOUNTING OF A STRAIGHT PLUG (YD) ON A BOARD



- 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

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NOTES

SMASH
Advanced SEM E modular connector

The SMASH connector offers extremely high robustness where signal integrity is required. Based on an aluminum shell with 1, 2 or 3 bays, the SMASH connector can house up to 450 contacts, with up to 150 contacts per bay. The chevron grid pattern (1.905 x 1.905 [.075 x .075]) provides high contact density for advanced electronics packaging. The metallic shell is equipped with grounding, guide pins, and keying devices to ensure mechanical reliability.

The modularity

Within the standard SEM E form factor, the SMASH connector provides a wide array of signal transmission combinations. Various inserts can be housed within the robust, modular shell while meeting the standard board and chassis formats.

A connector that is adaptable to all types of mounting and soldering processes

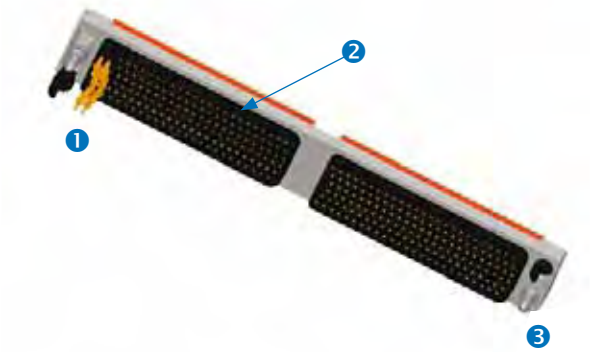
The sculptured flex circuit termination of the daughter card connector can accept the thickest boards. No tooling is required as the design provides good alignment to the solder pads of the daughter card.

A connector dedicated to harsh environment

The Starclip technology of the socket contact (with a 6 tine clip) offers high mechanical and electrical reliability, combined with low insertion force. The SMASH connector is ruggedized to meet extreme conditions such as salt spray, vibration, and contact resistance.

Flexibility

From 1 to 3 bays with 150 or 132 signal contacts per bay, the SMASH connector is available in either chevron grid or staggered grid* patterns. It can provide RF, power, and fiber optic solutions with hybrid arrangements. LVDS signals* are also available.



QUICK SELECTION GUIDE

Signal contacts ❶

FEMALE

MALE

For further terminations of contacts, consult us.

PAGE 62 | PAGE 62

Housing ❷

GRID

Chevron grid

Staggered grid

NUMBER OF ROWS

6 rows / 8 rows

For specific pitches or arrangements, consult us.

PAGE 64

Shell ❸

1 BAY

2 BAYS

3 BAYS

With or without ground spring or rackable, consult us.

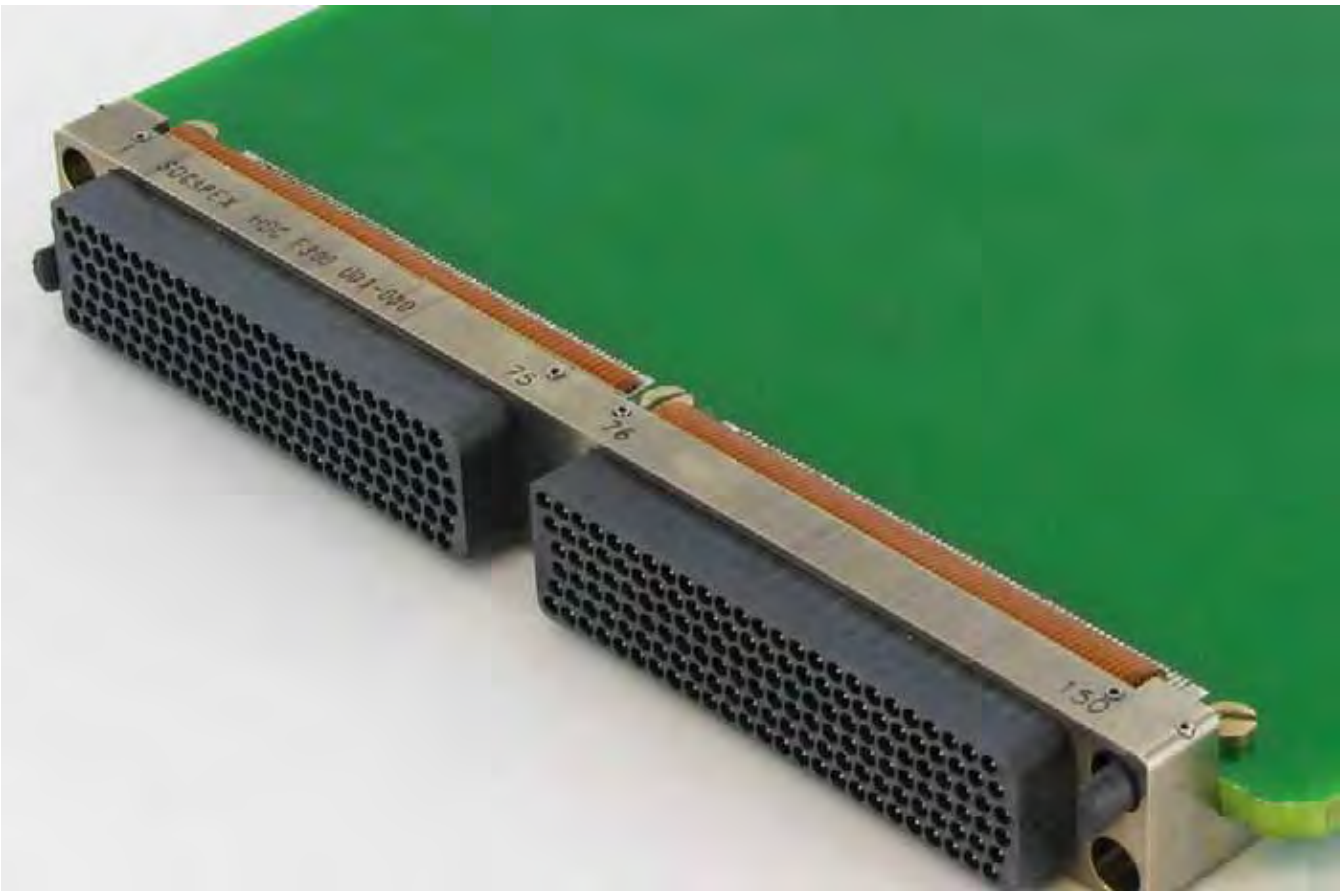
PAGE 64

The SMASH series serves various markets, including:

Military avionics & airframe | Commercial avionics & airframe | C4ISR

** Consult us*

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



SMASH Series

High density interconnect system for harsh environment applications

SMASH >>> GENERAL SPECIFICATIONS

ULTRA HIGH DENSITY

- **No tooling required. SEM E form factor.**
- **Flexible circuit termination of the plug can be used with daughter cards of various thicknesses. Compatible with all soldering processes.**
- **Excellent mechanical electrical reliability**
- **Chevron grid pattern (1.905 [.075] spacing along the row with 1.905 [.075] between rows, offset 0.635 [.025])**

Terminations

Recommended configurations

Main characteristics

- 3 versions with 1, 2 or 3 bays
- Each insert can house up 132 or 150 signal contacts depending on contacts sizes
- High density: 0.34 cts/mm^2 [130 cts/inch^2]
- 3 A per contacts / DWV: 1000 Vrms / Insulation resistance: 5Gohms
- Press-fit solderless attachment possible. *Consult us*
- Aluminum shell for electrical enhancements (filters, shell to shell continuity) as well as advanced mechanical robustness.

Standard

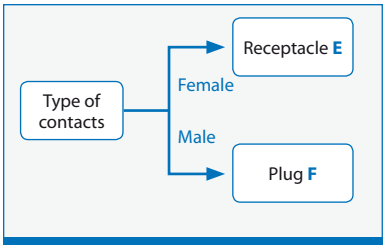
exceed all the MIL DTL 55302 requirements

MIL-DTL-55302

Markets

Main applications

How to order



Connector type

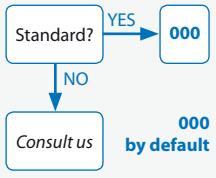
Female	Male	Description
YD	YD	**Straight** solder PC tail standard length
Z	Z	Solder cup
-	U01	SMT

Signal contact termination type

HDC - --- -- ---

Number of signal contacts	
1 cavity	132 150
2 cavities	264 300
3 cavities	396 450

Deviation



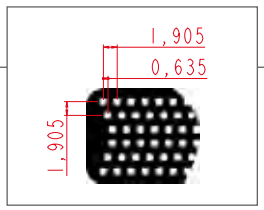
Amphenol Socapex capabilities for specific connector design

The metallic shell concept allows Amphenol to design numerous types of shells with various lengths and specific housings, providing:

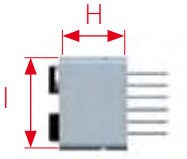
- Insertion of specific contacts (RF, optical termini, power, high power)
- Modification of the height or type of signal contact terminations
- Customization of rack and panel shells or the addition of a ceramic plane for high-frequency filtering
- A variety of grid and footprint styles, to comply with density requirements

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

SMASH >>> TECHNICAL SPECIFICATIONS

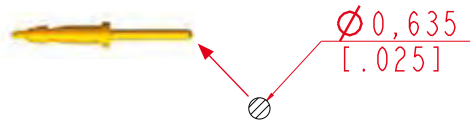


DIMENSIONAL CHARACTERISTICS



H = 7.4 [.291] for plug
H = 10.9 [.430] for receptacle
I = 14.8 $_{MAX}$ [.583]
L = 179.7 $_{MAX}$ [7.075]

MALE CONTACT



- **Mating end diameter:** Ø 0.635 [.025]
- **Mating end section** (mating side): 0.32 mm² [.0005 inch²]
- **Material:** brass alloy (machined)
- **Plating:** gold over nickel

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
- Termination: machined brass alloy
- Clip: CuBe[BeCu], stamped and formed

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

MATERIALS

- **Guiding devices:** passivated stainless steel 303
- **Shells:** aluminum 6060 T6
- **Plating shells:** electroless nickel
- **Plastic insert & coding devices:** thermoplastic LCP, 30% glass-fiber filled

MECHANICAL CHARACTERISTICS		
Backoff[1] (mm)	1.2 $_{MAX}$ [.047]	N/A
Mating force per contact (N) **Unmating force** per contact (N)	100g 40g	§ 4.5.4
Durability cycles	500	§ 4.5.9
Sinusoïdal vibrations (10 to 2000 Hz) micro discontinuity 2ns **Random vibrations** (600 to 700 Hz) micro discontinuity 2ns **Shocks** micro discontinuity 2ns	15 g 2.682g² / Hz 100 g / 6s	§ 4.5.10 *Consult us* § 4.5.14
Recommended tightening torques - nuts for M2.5 screws, brass (m.N) - nuts for M2 screws, brass (m.N)	 0.25 0.2	 N / A
ENVIRONMENTAL CHARACTERISTICS		
Thermal shocks Temperature (°C) cycles	 -65 / +150 5	 § 4.5.13
Salt Spray hours	96	§ 4.5.11
ELECTRICAL CHARACTERISTICS		
Current rating per contacts (A)	3 $_{MAX}$	§ 4.5.5
Insulation resistance (GΩ)	5 $_{MIN}$	§ 4.5.8
Contact resistance (mΩ)	10 $_{MIN}$	§ 4.5.12
Dielectric Withstanding Voltage (Vrms)	1000 $_{MIN}$	§ 4.5.7.1
Service voltage (at 50 Hz) (Vrms)	250	N / A

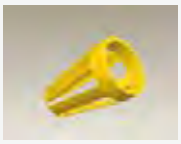
[1]: When both connectors are fully mated, the backoff is the maximum distance the connectors can be unmated while functioning properly

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

SMASH >>> STANDARD TECHNOLOGY OF CONTACT (❶)

FEMALE CONTACTS FOR RECEPTACLES

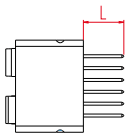
Starclip female technology



- 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 Ø0.635 [.025]
- **Plating** on active part (clip)

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

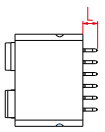
Standard straight PC tail



- Thru hole soldering
- Mother board or mezzanine connection
- PCB thickness: up to 5.5 [.217]
- **Plating** (µm [µin])

Version	Ni	Pure Sn	Sn Pb
RoHs	2.5 [.098]	5 [.197]	
Standard	3 [.118]		10 [.394]
Termination style			**YD**

Press-fit

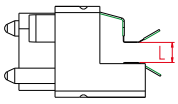


- For solderless assembly
- Mother board or mezzanine connection
- PCB thickness: 2.5_{MIN} [.098]
- **Plating** (µm [µin])

Ni electrolytic	Ni electroless	Sn Pb
2 [.079]	15.2 [.598]	10 [.394]
Termination style		**YP**

MALE CONTACT FOR PLUGS

SMT



- Flexible circuit for double sided SMT mounting
- Daughter card or extended card
- PCB thickness: specific, *consult us*
- **Plating** (µm [µin])

Cu	Ni	**Au**
1 [.039]	3.5 [.138]	**1.3 [.051]**
Consult us		**U01**

	YD	YP	U01
L_{MAX}	6.5 [.256]	2.5_{MIN} [.098]	2.4 ± 0.3 [.094 ± .012]

AMPHENOL SIGNAL CONTACTS CAPABILITIES

- Male contacts attached to flexible circuit for double sided SMT mounting on daughter card ***Consult us***
- Female contacts with straight PC tails for thru hole soldering, with numerous contact lengths available
- Male and female solder cup termination for soldering on a cable
- Specific plating

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

SMASH >>> SPECIAL TECHNOLOGY OF CONTACT (❶)

Power contacts 20A

- Thru hole soldering
- Mother board or daughter board
- 20A / contact

Consult us

RADSOK® contact 350A

- High power contact
- Mother board or daughter board
- 350A / contact

Consult us

Optical contacts

- 2x12 optical channels (MT ferules)

Consult us

AMPHENOL CUSTOM DESIGN CAPABILITIES

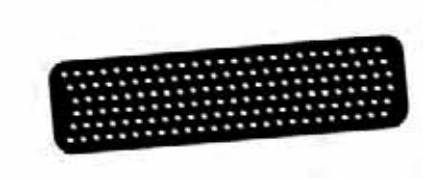
- Development of housings and shells for specific arrangement or special contacts
- Numerous types of special contacts, various lengths and mounting processes
- Various platings (Tin Lead, Gold, Pure bright tin …)
- Proven knowledge in custom design for tailor-made applications
- Development of coaxial contacts

Consult us

SMASH >>> STANDARD HOUSINGS AND SHELLS (❷ & ❸)

HOUSINGS 6-ROW CHEVRON GRID PATTERN

150 signal contacts insert



132 signal contacts insert

STANDARD SHELLS WITH 1, 2 OR 3 BAYS

1 bay connector / 150 signal contacts

1 bay connector / 132 signal contacts

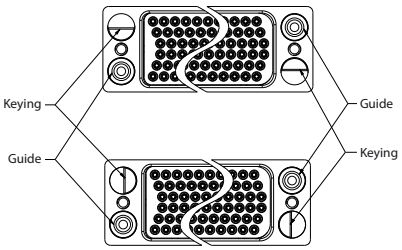
2 bays connector / 300 signal contacts

2 bays connector / 264 signal contacts

3 bays connector / 450 signal contacts

3 bays connector / 396 signal contacts

KEYING AND GUIDING



Connectors are supplied with non-assembled keying and guiding devices.

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

SMASH >>> SPECIAL HOUSINGS AND SHELLS (❷ & ❸)

AMPHENOL CAPABILITIES: HOUSINGS

Specific grid: Square grid pattern, 1.905 [.075] x 1.905 [.075] staggered grid pattern, 1.588 [.063] x 1.588 [.063] staggered grid pattern, 2.54 mm…

Housings for specific contacts

Consult us

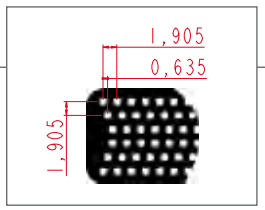
AMPHENOL CAPABILITIES: SHELLS

Rackable shells

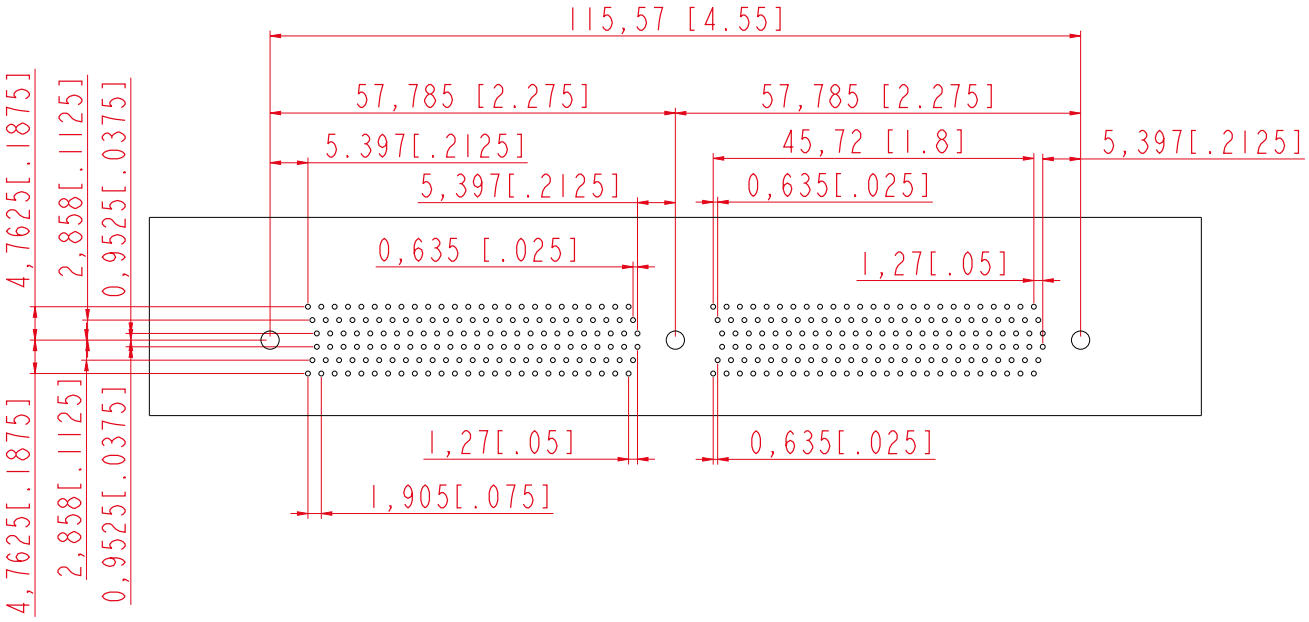
Specific shells

Consult us

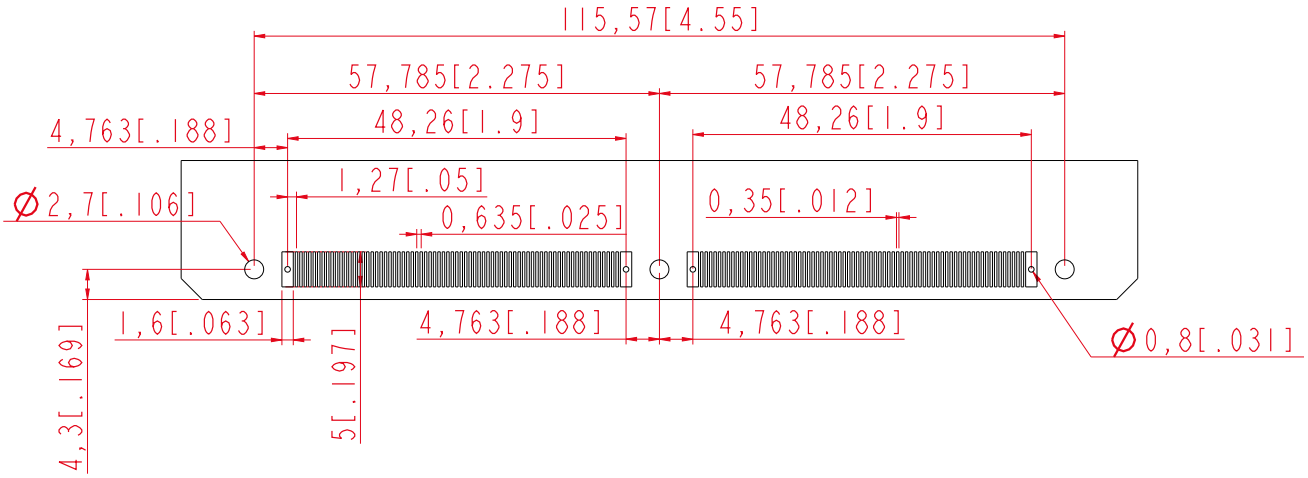
SMASH >>> LAYOUTS



LAYOUTS FOR 300 SIGNAL CONTACTS CONNECTOR WITH YD/YP CONTACTS



LAYOUTS FOR 300 SIGNAL CONTACTS CONNECTOR WITH U01 CONTACTS



For further arrangements, consult us

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

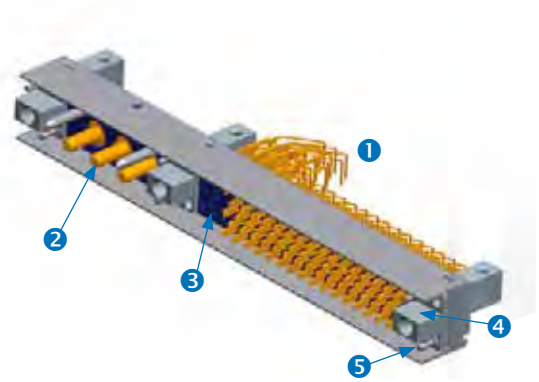
NOTES

SIAL
The hybrid connector for use with thermal clamps

SIAL is a modular high density interconnection system that has the capability to mix signal and coax contacts. The contact technology developed for this connector allows the use of thermal clamps. With 3 sizes of modules, the SIAL connectors provide the arrangement needed, from 18 to 392 contacts. In a staggered grid pattern (2.54 x 1.905 [.100x.075]), this connector houses 5 rows of contacts in a low profile board to board format. Additionally, SIAL connectors provide shielding on both plug & receptacle, which allows the dissipation of all the electrical charge while mating.

The concept
3 standard modules are available with 18, 58 and 98 signal contacts on 5 rows. These allow arrangements up to 392 contacts. The various modules are maintained in a metallic shell, allowing both protection of male contacts on the plug, and a mix of signal and coax modules.

Compatible with the use of thermal clamps
Its standard contact technology, already used in the monolithic SIHD connector, permits the lateral displacement (±0.25 [.010]) of the pin into the socket without generating any stress on the contact termination on the PCB.
This feature allows the use of thermal clamps to keep the daughter board in position after mating, as well as the dissipation of energy generated by the components on the board from the heat sink (thermal drain) to the cold wall (liquid cooled) or to the chassis. The locking of the thermal clamps provides the lateral movement of the plug into the receptacle. The SIAL allows this lateral displacement of ±0.25 [.010] without creating stress on the solder joints or on the contact area.



A complete range for test, programming, maintenance
E = Female receptacle for mother board
F = Male plug for daughter board
T = Female test receptacle for daughter board
S = Male test plug
P = Female extender receptacle

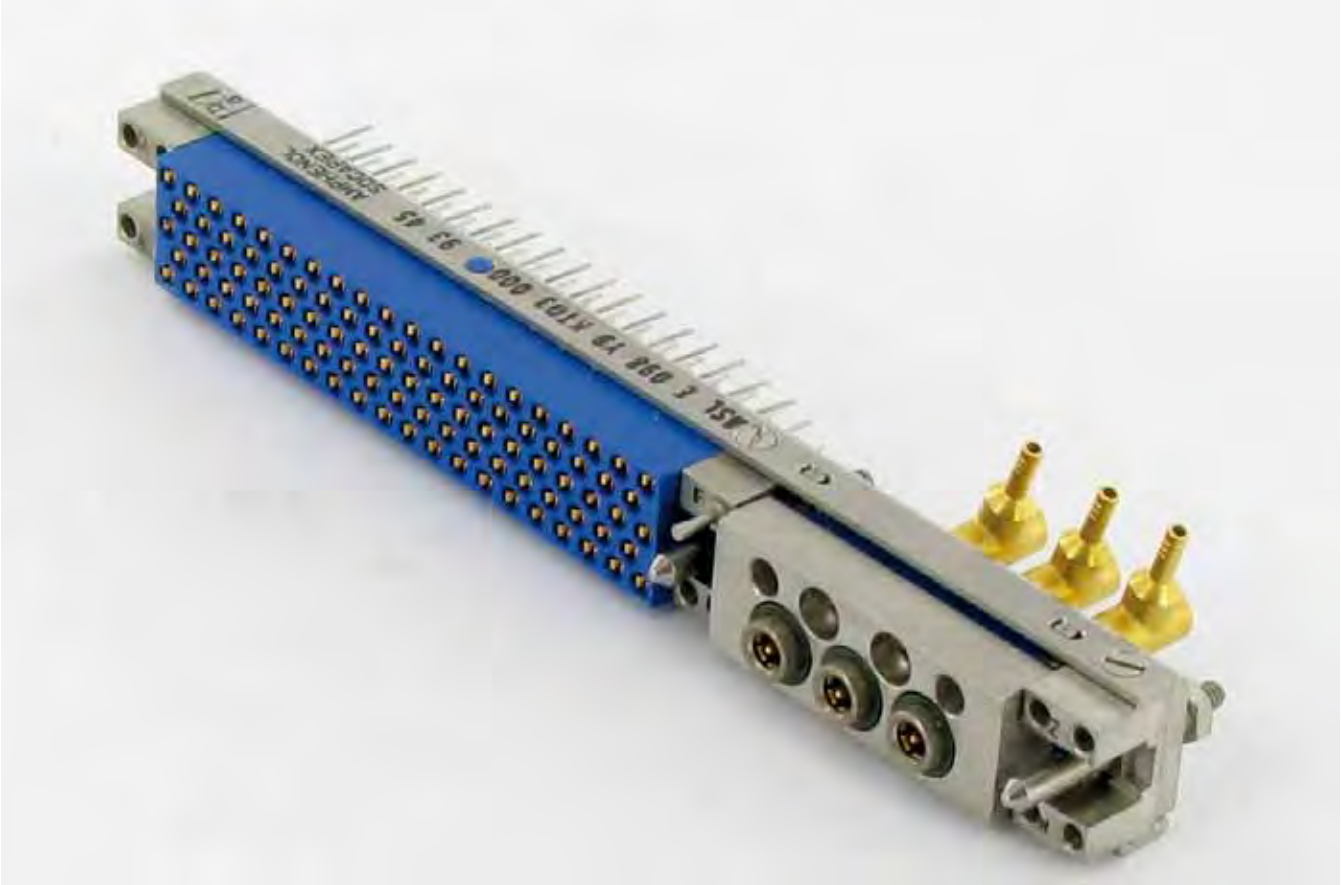
QUICK SELECTION GUIDE

Signal contacts ❶	Coax contacts ❷	Modules ❸	Fittings & Guiding ❹	Keying ❺
FEMALE for receptacles for extender receptacles **MALE** for plugs for test plugs	**COAX SIZE 12** **COAX SIZE 16** **3 COAX / MODULE** **5 COAX / MODULE**	**NUMBER OF SIGNAL CONTACTS** **018, 036, 058, 076, 098, 116, 156, 196, 214, 254, 312, 370, 392** **NUMBER OF COAX CONTACTS** **Size 12: 03, 06, 09, 12** **Size 16: 05, 10**	**FITTING** **FEMALE SOCKET GUIDE** **MALE GUIDE PIN**	**5 polarizing pins / connector**
PAGE 73 | PAGE 72	PAGE 74	PAGE 76	PAGE 77	PAGE 77

The SIAL series serves various markets, including:

Commercial avionics & airframe
Military avionics & airframe
Space

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



SIAL Series

The hybrid connector for use with thermal clamps

SIAL >>> GENERAL SPECIFICATIONS

MEDIUM DENSITY

- **Modular connector mixing signal and coax contacts in many arrangements**
- **Lateral displacement capability allowing the use of thermal clamps: ± 0.25 [± .010]**
- **Complete range for test, programming and maintenance**
- **Designed for severe mechanical environments**
- **2.54 [.100] staggered grid (1.27 [.050] offset), 1.905 [.075] between rows**

Terminations

Recommended configurations

Standard

MIL-DTL-55302 **CECC 75101-012**

Main characteristics

- Medium density: 0.14 cts/mm² [90 cts/inch²]
- 13 arrangements on 5 rows of contacts, from 18 to 392 signal contacts
- 5 hybrid arrangements mixing coax and signal contacts
- 3 A per signal contacts / DWV: 750 Vrms
- Lateral rails to protect the male contacts from external damage
- Repairable contacts for easy maintenance

Markets

Main applications

How to order

E	Female receptacle
F	Male plug
T	Female test receptacle
S	Male test plug
P	Female extender receptacle

Connector type

C	Conductive fitting Standard version for E and F types
Ø	Non conductive fitting (uncoloured phosphorous anodization) Test versions and specifics

Conductivity of the fitting

Size	Male plug	Female receptacle (with lateral displacement)
Size 12	**KX**	**KT**
Size 16	**NX**	**NT**
No coaxial contact	**Ø**	

Coax module

ASL	**-**	**---**	**---**	**-**	**--**	**---**	**---**	

Deviation	
000	Standard
001	ASL F or E with 5 right & left coax
002	ASL F or E with 5 coax before signal contacts
010	ASL E with 3 mm PCB thickness
011	ASL E with heatshrink sleeve
100	ASL S and E 392 screw locking system
102	ASL F with Y01 contacts without lateral displacement
103	ASL S Y04 straight/flex locking system
200	ASL 39758119 space customer specification
300	ASL MA3401 space customer specification
xxx	Special deviations

Number of signal contacts *(see page ???)*

Signal contacts only		Signal & coaxial contacts
018	**156**	**018** (+3)
036	**196**	**058** (+3)
058	**214**	**058** (+5)
076	**254**	**156** (+10)
098	**312**	**196** (+5)
116	**370**	**254** (+5)
	392	

Signal contacts *(see pages 72 to 73)*

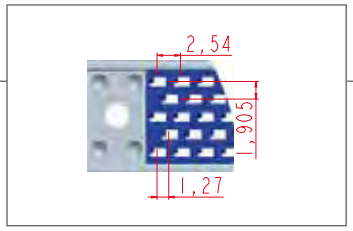
	Male contact	Female contact
E		**Y09, Y19**
F	**Y01, Y02, Y04, U04, U05, U06, U07, U08**	
T		**Y01, Y02, Y04, U04, U05, U06, U07, U08**
P		**Y01, Y02, Y04, U04, U05, U06, U07, U08**
S	**Y03 Y02 Y04**	

Number of coax contacts *(see page 81)*

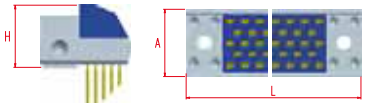
Size	Number of coax
12	**03**
	06
	09
	12
16	**05**
	10
No coaxial contact	**Ø**

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

SIAL >>> TECHNICAL SPECIFICATIONS



DIMENSIONAL CHARACTERISTICS



L= 22.86[.900] to 231.14[9.100] for signal version
L= 53.34[2.100] to 180.34[7.100] for hybrid version
A= 12.1 $_{MAX}$ [.476]
H= 6.41 $_{MAX}$ [.252] for plug
H= 10.26 $_{MAX}$ [.404]

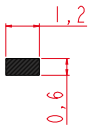
FEMALE CONTACT

Cross cavity by Amphenol: lateral displacement compatible
- Cross section of the lateral displacement of the male contact inside the female cavity
- Maintains 2 points of contact
- Allows a ± 0.25 [± .010] lateral displacement
- No stress on solder joints or on the contact area

Material: beryllium copper (stamped)

Plating:
- Termination: tin lead or lead free
- Active contact area: gold over nickel

MALE CONTACT



Mating end size: 0.6 x 1.2 [.047 x .024]

Contact section (mating side)**:** 0.72mm² [.001 in²]

Material: beryllium copper (stamped)

Plating:
- Termination: tin lead or lead free
- Active contact area: gold over nickel

MATERIALS

- **Fixing devices:** anodized aluminium
- **Guiding devices:** passivated stainless steel
- **Polarizing pins:** passivated stainless steel
- **Metallic rails:** passivated stainless steel
- **Plastic inserts:** thermoset DAP, 30% glass-fiber filled

MECHANICAL CHARACTERISTICS	
Backoff[1] (mm)	< 0.8 [.031]
Mating force per contact (N)	0.58 $_{MAX}$
Unmating force per contact (N)	0.16 < F < 0.58
Durability cycles	500
Sinusoidal vibrations (10 to 2000 Hz) micro discontinuity 2ns	10 g
Random vibrations (10 to 2000 Hz) micro discontinuity 2ns	0.15 g² / Hz
Shocks micro discontinuity 1ns	100 g
ENVIRONMENTAL CHARACTERISTICS	
Thermal shocks (°C)	-55 / +125
Salt Spray (hours)	144* or 96
ELECTRICAL CHARACTERISTICS	
Current rating per contacts (A)	3
Insulation resistance (at 500Vdc) (GΩ)	5 $_{MIN}$
Contact resistance (mΩ)	25 $_{MAX}$
Dielectric Withstanding Voltage (Vrms)	750
Capacitance between contacts (pF)	1.5 $_{MAX}$
Service voltage at 50 Hz (Vrms)	250

** "C" standard version*

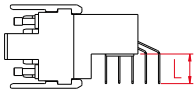
[1]: When both connectors are fully mated, the backoff is the maximum distance the connectors can be unmated while functioning properly

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

SIAL >>> SIGNAL CONTACTS (❶)

MALE CONTACTS FOR PLUGS

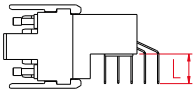
Right angle PC tail



- Thru hole soldering
- Daughter board
- PCB thickness: 3.1_{MAX} [.122]

Termination style	Y01

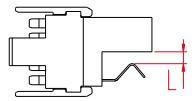
Right angle PC tail



- Thru hole soldering
- Daughter board
- PCB thickness: 2.6_{MAX} [.102]

Termination style	Y02

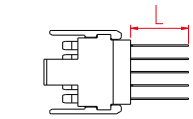
SMT double side PCB, centered



- SMT soldering
- Double-sided daughter board, centered
- PCB thickness: 2.6 ± 0.235 [.102 ± .009]

Termination style	U04

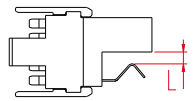
Straight PC tail



- Thru hole soldering
- Daughter board
- PCB thickness: 4.5 ± 0.45 [.177 ± .018]

Termination style	Y04

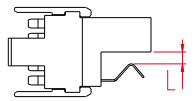
SMT double side, centered



- SMT soldering
- Double-sided daughter board, centered
- PCB thickness: 1.6 ± 0.160 [.063 ± .006]

Termination style	U06

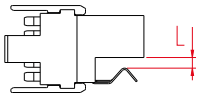
SMT double side, centered



- SMT soldering
- Double-sided daughter board, centered
- PCB thickness: 2 ± 0.2 [.079 ± .008]

Termination style	U05

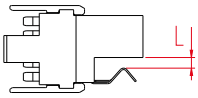
SMT double side, off centered



- SMT soldering
- Double-sided daughter board, offset
- PCB thickness: 2.6 ± 0.235 [.102 ± .009]

Termination style	U08

SMT double side, off centered



- SMT soldering
- Double-sided daughter board, offset
- PCB thickness: 2.44 ± 0.42 [.096 ± .016]

Termination style	U07

	Y01	Y02	Y04	U04	U05	U06	U07	U08
L_{MAX}	4.2 ± 0.2 [.165 ± .008]	3.7 ± 0.2 [.146 ± .008]	6 [.236]	2.6 ± 0.235 [.102 ± .009]	2 ± 0.2 [.079 ± .008]	1.6 ± 0.160 [.063 ± .006]	2.44 ± 0.42 [.096 ± .016]	2.6 ± 0.235 [.102 ± .009]
Termination section	Ø 0.4 ± 0.03 [.016 ± .001]			0.3 x 0.8 [.012 x .031]				
Mating end size	1.2 x 0.6 [.047 x .024]							
Active contact area plating µm[µin]	2 [.079] Ni + **1[.039] Au**							
Termination plating µm [µin]	2 [.079] Ni + 3 [.118] SnPb or bright pure Sn for RoHS version			2 [.079] Ni + 7 [.276] SnPb or bright pure Sn for RoHS version				

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

SIAL >>> SIGNAL CONTACTS (❶)

MALE CONTACT FOR TEST PLUGS

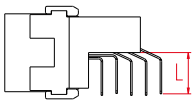
Right angle PC tail

- Thru hole soldering
- Daughter board
- PCB thickness: 1.6 ± 0.16 [.063 ± .006]

Termination style	Y03

MALE CONTACT FOR EXTENDER RECEPTACLES

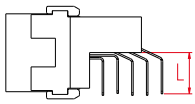
Right angle PC tail, short length



- Thru hole soldering
- Extender card
- PCB thickness: 2.6 $_{MAX}$ [.102]

Termination style	Y02

Right angle PC tail

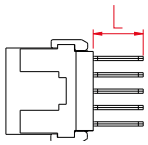


- Thru hole soldering
- Extender card
- PCB thickness 3.1$_{MAX}$ [.122]

Termination style	Y01

FEMALE CONTACTS FOR RECEPTACLES

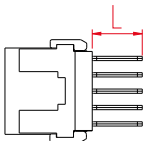
Straight PC tail, standard length



- Thru hole soldering
- Mother board
- PCB thickness: 3.75 ± 0.75 [.148 ± .030]

Termination style	Y09

Straight PC tail, short length



- Thru hole soldering
- Mother board
- PCB thickness: up to 2 ± 0.2 [.079 ± .008]

Termination style	Y19

	Y03	Y02	Y01	Y09	Y19
L $_{MAX}$	2.8 ± 0.2 [.165 ± .008]	3.7±0.2 [.146 ± .008]	4.2 ± 0.2 [.165 ± .008]	6 [.236]	4.5 ± 0.2 [.177 ± .008]
Mating end size	1.2 x 0.6 [.047 x .024]				
Termination section	Ø 0.4 ± 0.03 [.016 ± .001]			Ø 0.5 ± 0.03 [.020 ± .001]	
Active contact area plating µm[µin]	2 [.079] Ni + **1[.039] Au**				
Termination plating µm [µin]	2 [.079] Ni + 3 [.118] SnPb or bright pure Sn for RoHS version				

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

SIAL >>> SPECIAL CONTACTS (❷)

SIZE 16 COAXIAL CONTACTS

Male contacts for plugs – 5-cavity module

Straight crimp barrel

- For 5-cavity module
- For 2, 1.2, 2.7 or 2.4 cable [for .079, .047, .106 or .094 cable]
- Size 16: 6 GHz depending on cable – 50 Ω

2 [.079] 1. [.047] 2.7 [.106] 2.4 [.094]	**320008** **320010** **320015** **320016**

Straight PC tail - UT47

- For 5-cavity module
- For UT47 semi-rigid cable
- Size 16: 6 GHz depending on cable – 50 Ω

Consult us	**320007**

Straight PC tail - Sucoform

- For 5-cavity module
- For Sucoform cable 0.086 [.003]
- Size 16: 6 GHz depending on cable – 50 Ω
- No lateral displacement

Consult us	**320020**

Right angle PC tail

- For 5-cavity module
- Size 16: 6 GHz depending on cable – 50 Ω

Consult us	**320005**

Female contacts for receptacles – 5-cavity module

Straight crimp barrel

- For 5-cavity module
- For 2, 1.2, 2.7 or 2.4 cable [for .079, .047, .106 or .094 cable]
- Size 16: 6 GHz depending on cable – 50 Ω

2 [.079] 1.2 [.047] 2.7 [.106] 2.4 [.094]	**320009** **320011** **320017** **320018**

Straight PC tail - UT47

- For 5-cavity module
- For UT47 semi-rigid cable
- Size 16: 6 GHz depending on cable – 50 Ω

Consult us	**320006**

Straight PC tail - Sucoform

- For 5-cavity module
- For Sucoform cable 0.086 [.003]
- Size 16: 6 GHz depending on cable – 50 Ω
- No lateral displacement

Consult us	**320021**

SIAL >> SPECIAL CONTACTS (❷)

SIZE 12 COAXIAL CONTACTS

Male contacts for plugs – 3-cavity module

Right angle PC tail

- For 3-cavity module
- Size 12: 0 to 3 GHz – 50 Ω

Consult us	**320000**

Crimp barrel

- For 3-cavity module
- Size 12: 0 to 3 GHz – 50 Ω
- Standard designation: M39029 / 28 - 211

Consult us	**900340**

Female contacts for receptacles – 3-cavity module

Right angle crimp barrel – KX22A

- For 3-cavity module
- For KX22A cable
- Size 12: 0 to 3 GHz – 50 Ω

Consult us	**320001**

Right angle crimp barrel – F 1703/66

- For 3-cavity module
- For F 1703 / 66 cable
- Size 12: 0 to 3 GHz – 50 Ω

Consult us	**320004**

Straight PC tail

- For 3-cavity module
- For test only, specific application
- Size 12: 0 to 3 GHz – 50 Ω
- No lateral displacement

Consult us	**320002**

Crimp barrel

- For 3-cavity module
- Standard designation: M39029 / 27 - 210
- Size 12: 0 to 3 GHz – 50 Ω
- With lateral displacement

Consult us	**900354**

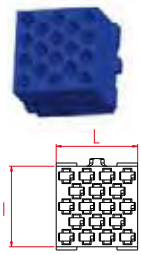
	16-SIZE CONTACT	12-SIZE CONTACT
Impedance Ω	50	50
Voltage rating V	180	180
Current rating mA	500	500
Contact retention N	≥ 50	≥ 50
Frequency range GHz	0 to 1	0 to 1
Contact resistance mΩ	≤ 12	≤ 12
VSWR at 1 GHz	1.3_{MAX}	1.3_{MAX}
Insertion and extraction force per contact N	1 ≤ F ≤ 15	1 ≤ F ≤ 15

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

SIAL >> MODULES (❸)

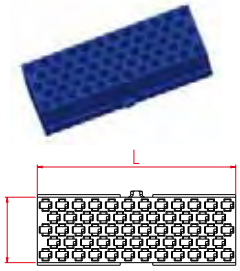
SIGNAL MODULES

18 signal contacts



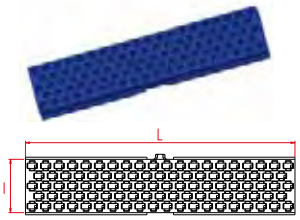
- Arrangement available:
  - 18
  - 18 x 2
  - 18 + 58

58 signal contacts



- Arrangement available:
  - 58
  - 58 + 18
  - 58 x 2
  - 58 + 98
  - 58 x 2 + 98
  - 58 + 98 x2
  - 58 x 2 + 98 x 2
  - 58 x 3 + 98 x 2

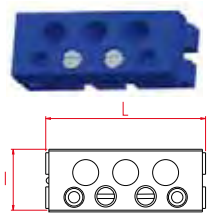
98 signal contacts



- Arrangement available:
  - 98
  - 98 + 58
  - 98 x 2
  - 98 + 2 x 58
  - 98 x 2 + 58
  - 98 x 2 + 58 x 2
  - 98 x 2 + 58 x 3
  - 98 x 4

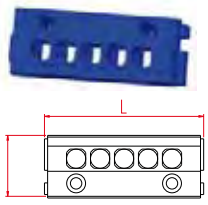
HYBRID MODULES

3 coax contacts – size 12



- 3-cavity module for 12-size coaxial contact
- Arrangement available:
  - 3 + 18
  - 3 + 58

5 coax contacts – size 16



- 5-cavity module for 16-size coaxial contact
- Arrangement available:
  - 5 + 98
  - 5 x 2 + 98 + 58

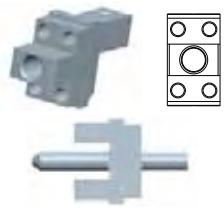
	18 signal contacts	58 signal contacts	98 signal contacts	3 coax contacts	5 coax contacts
L	10.16 [.400]	30.48 [1.200]	50.8 [2.1000]	25.4 $_{MAX}$ [1.000]	
I Receptacle Plug	10.05 [.396] 10.8 [.425]			9.95 [.392] 10.8 [.425]	

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

SIAL >>> FITTINGS/GUIDING & KEYING (❹ & ❺)

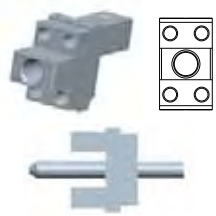
FITTINGS / GUIDING (❹)

A- centered end fittings



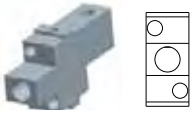
- 1 centered end fitting at one end of the connector
- Max length: 6, 35 [.250]
- Male guide pin on receptacle
- Female centered hole on plug
- 4 holes for polarizing

B- end fittings



- 1 end fitting at one end of the connector
- Max length: 6, 35 [.250]
- Male guide pin on receptacle
- Offset hole on plug
- 4 holes for polarizing pin

Central fittings



- Max length: 6, 35 [.250]
- Guiding device: Male guide pin on receptacle
- 2 holes for polarizing pin

Signal version

- 1 fitting for 196, 214, 254 and 312 positions
- 2 fittings for 370 positions
- 3 fittings for 392 positions

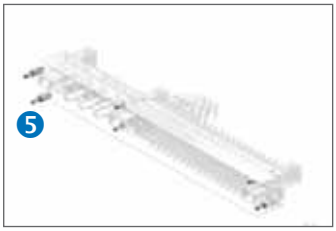
With coaxial contacts

- 1 fitting for 18 + 3, 58 + 3 and 98 + 5 positions
- 2 fittings for 98 + 58 + 5 x 2 positions

KEYING (❺)

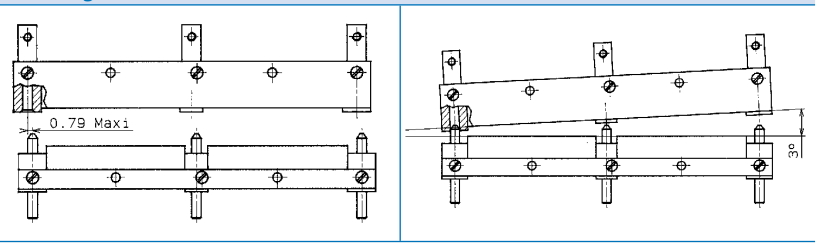
Polarizing pins

- 2 pins at each end fitting for the plug / 2 pins at each end fitting for the receptacle
- 1 pin at each central fitting for the plug / 1 pin at each central fitting for the receptacle
- Identification of keying cavities: clockwise for the plugs, counterclockwise on the receptacle
- A,B,C,D on A fitting, W,X,Y,Z on B fitting

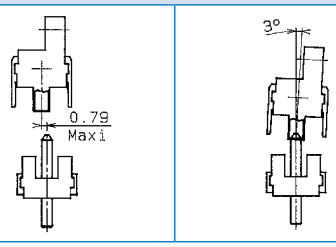


REALIGNMENT CAPABILITY

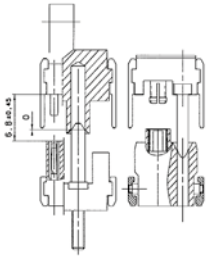
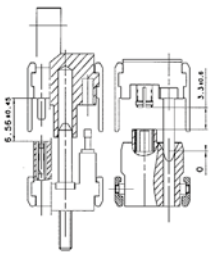
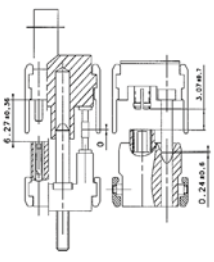
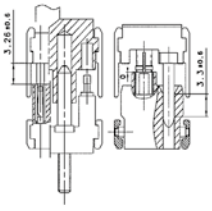
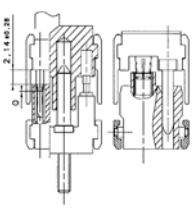
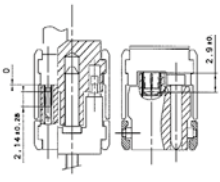
In the longitudinal axis



In the lateral axis



MATING SEQUENCE

Shell guiding	Coax guiding	Keying	Coax contact	Signal contact	Housing contact
					
6.8 ± 0.45 [.268 ± .018]	6.56 ± 0.45 [.258 ± .018] 3.3 ± 0.6 [.130 ± .024]	6.27 ± 0.36 [.247 ± .014] 0.24 ± 0.6 [.009 ± .024] 3.7 ± 0.7 [.121 ± .028]	3.26 ± 0.6 [.128 ± .024] 3.3 ± 0.6 [.130 ± .024]	2.14 ± 0.28 [.084 ± .011]	2.14 ± 0.28 [.084 ± .011] 2.9 ± 0.6 [.114 ± .024]

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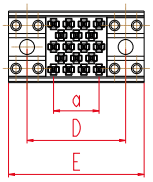
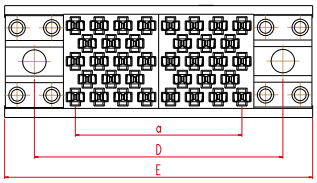
SIAL >> SIGNAL VERSION (❸)

TYPICAL ARRANGEMENTS

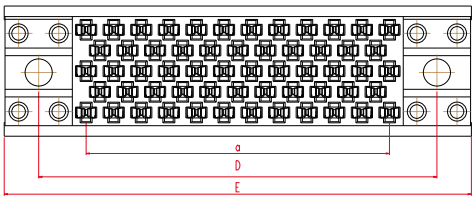
18 signal contacts



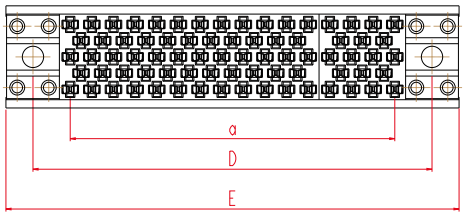
36 signal contacts



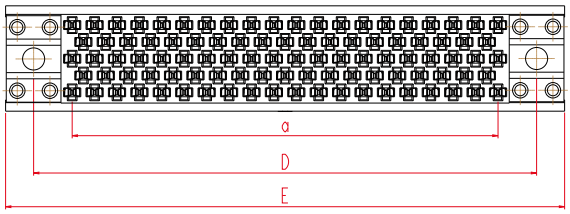
58 signal contacts



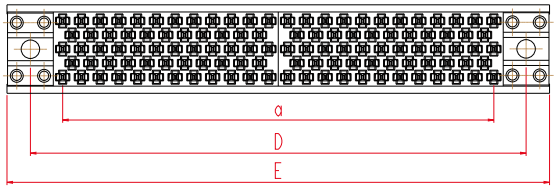
76 signal contacts



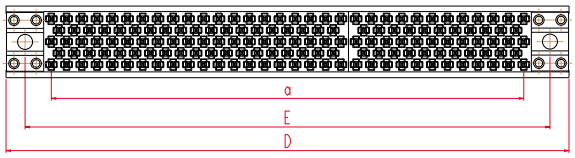
98 signal contacts



116 signal contacts



156 signal contacts



	18	36	58	76	98	116	156
D	16.51 [.650]	26.67 [1.050]	36.83 [1.450]	46.99 [1.850]	57.15 [2.250]	67.31 [2.650]	87.63 [3.450]
E_{MAX}	22.86 [.900]	33.02 [1.300]	43.18 [1.700]	53.34 [2.100]	63.5 [2.500]	73.66 [2.900]	93.98 [3.700]
a	7.62 [.340]	17.78 [.700]	27.94 [1.100]	38.1 [1.500]	48.26 [1.900]	58.42 [2.300]	81.28 [3.200]

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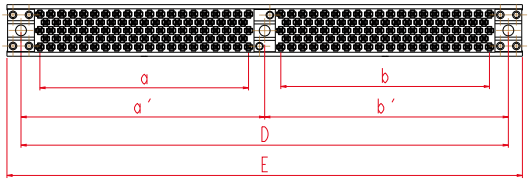
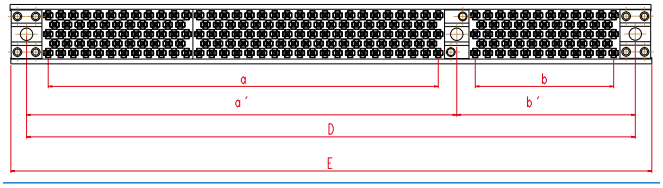
SIAL >> SIGNAL VERSION (❸)

TYPICAL ARRANGEMENTS

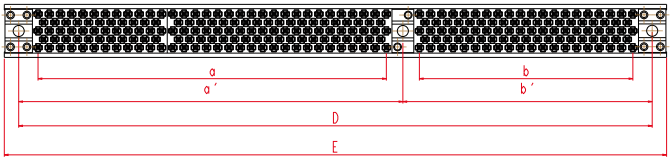
196 signal contacts



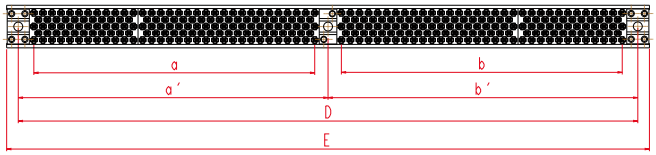
214 signal contacts



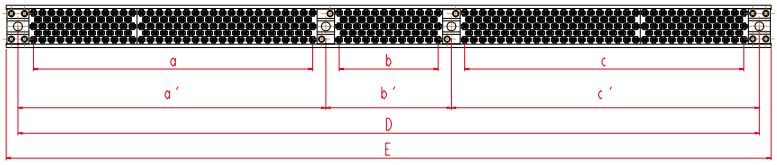
254 signal contacts



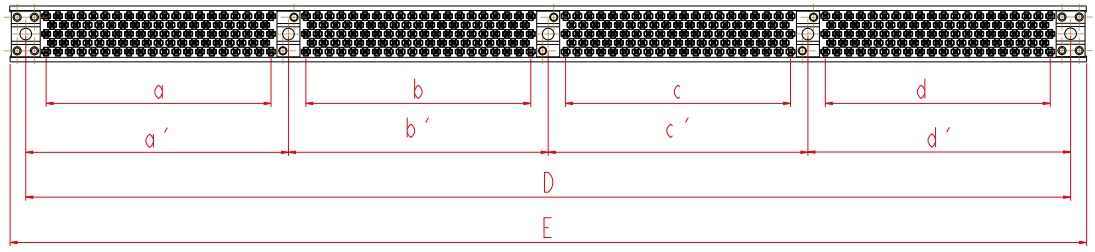
312 signal contacts



370 signal contacts



392 signal contacts



	196	214	254	312	370	392
D	113.03 [4.450]	123.19 [4.850]	143.51 [5.650]	173.99 [6.850]	209.55 [8.250]	224.79 [8.850]
E_{MAX}	119.38 [4.700]	129.54 [5.100]	149.86 [5.900]	180.34 [7.100]	215.9 [8.500]	231.14 [9.100]
a	48.26 [1.900]	81.28 [3.200]	81.28 [3.200]	81.28 [3.200]	81.28 [3.200]	48.26 [1.900]
a'	56.515 [2.225]	86.995 [3.425]	86.995 [3.425]	86.995 [3.425]	86.995 [3.425]	56.515 [2.225]
b	48.26 [1.900]	27.94 [1.100]	48.26 [1.900]	81.28 [3.200]	27.94 [1.100]	48.26 [1.900]
b'	56.515 [2.225]	36.195 [1.425]	56.515 [2.225]	86.995 [3.425]	35.56 [1.400]	55.88 [2.200]
c					81.28 [3.200]	48.26 [1.900]
c'					86.995 [3.425]	55.88 [2.200]
d						48.26 [1.900]
d'						56.515 [2.225]

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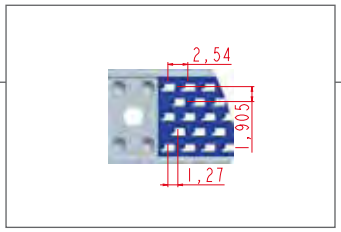
SIAL >> SIGNAL VERSION (❸)

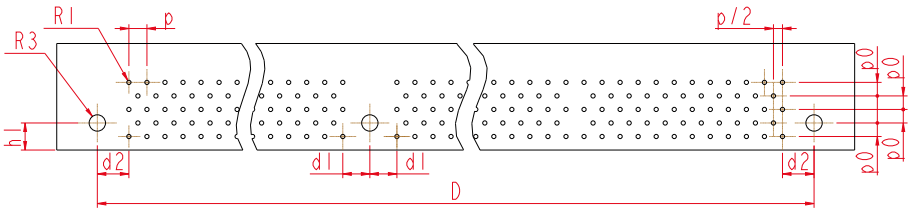


LAYOUTS

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

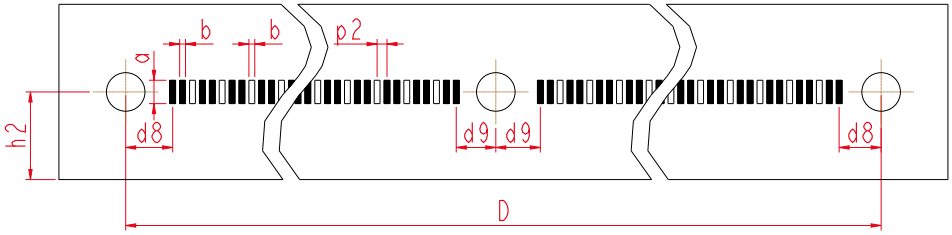
With YC signal contacts for plug

DAUGHTER BOARD



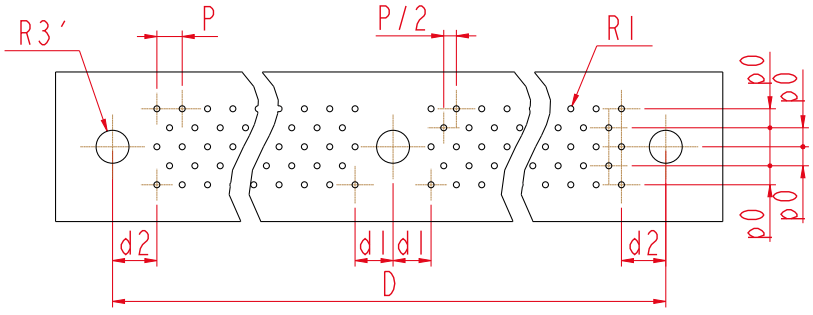
With U - - - signal contacts for plug

DAUGHTER BOARD



With Y - - signal contacts for receptacle

MOTHER BOARD



R_1	R_3	R_3'	p	p/2	p_0	p_2	d_1	d_2	d_8	d_9	a	b	h_1	h_2
Ø 0.6 MIN [.024]	Ø $2.3^{+0.15}_{-0.1}$ [$.091^{+.006}_{-.004}$]	Ø 3.3 [.130]	2.54 [.100]	1.27 [.050]	1.905 [.075]	0.85 [.033]	3.81 [.150]	4.445 [.175]	4.02 [.158]	3.39 [.133]	2 MAX [.079]	0.5 MAX [.020]	3.81 [.150]	3.81 [.150]

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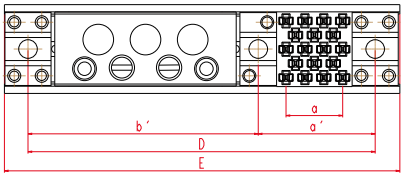
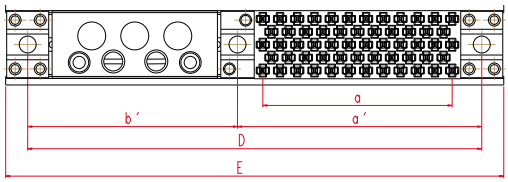
SIAL >> COAXIAL VERSION (❸)

TYPICAL ARRANGEMENTS

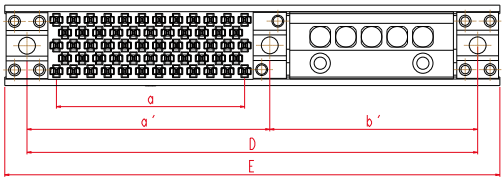
18 signal contacts + 3 coax



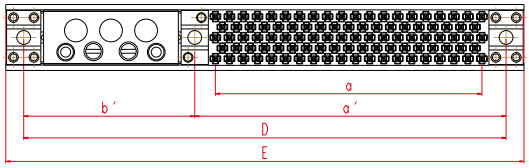
58 signal contacts + 3 coax



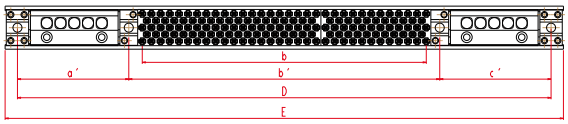
58 signal contacts + 5 coax



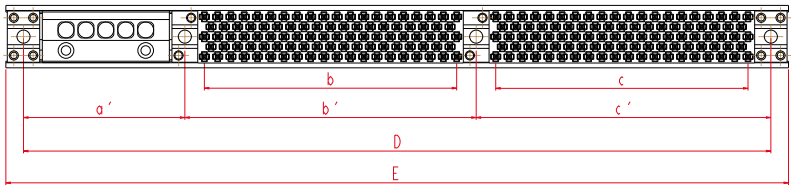
98 signal contacts + 3 coax



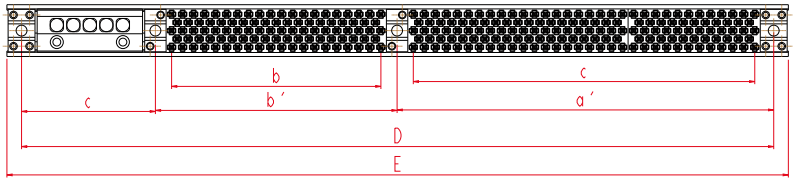
5 coax + 98 + 58 signal contacts + 5 coax



196 signal contacts + 5 coax



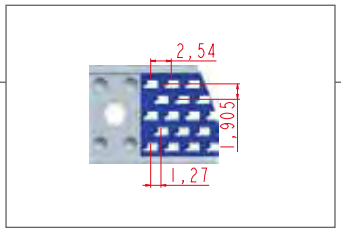
254 signal contacts + 5 coax



	18 + 3	58 + 3	58 + 5	98 + 3	5 + 98 + 58 +5	196 + 5	254 + 5
D	46.99 [1.850]	67.31 [2.650]	67.31 [2.650]	87.63 [3.450]	148.59 [5.850]	143.51 [5.650]	173.99 [6.850]
E_{MAX}	53.34 [2.100]	73.66 [2.900]	73.66 [2.900]	93.98 [3.700]	154.94 [6.100]	149.86 [5.900]	180.34 [7.100]
a	7.62 [.340]	27.94 [1.100]	27.94 [1.100]	48.26 [1.900]	/	48.26 [1.900]	81.28 [3.200]
a'	15.875 [.625]	36.195 [1.425]	36.195 [1.425]	56.515 [2.225]	31.115 [1.225]	56.515 [2.225]	86.995 [3.425]
b	/	/	/	/	81.28 [3.200]	48.26 [1.900]	48.26 [1.900]
b'	31.115 [1.225]	31.115 [1.225]	31.115 [1.225]	31.115 [1.225]	86.36 [3.400]	55.88 [2.200]	55.88 [2.200]
c					31.115 [1.225]	31.115 [1.225]	31.115 [1.225]

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

SIAL >> SIZE 16 COAXIAL VERSION (❸)

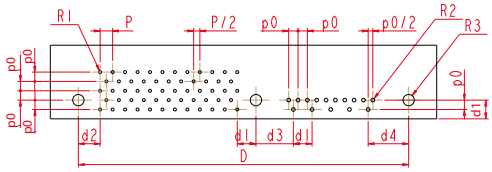


LAYOUTS

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

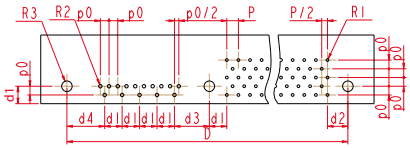
With Y0. male signal contacts and 5 coaxial contacts for plug

NX05-002 DAUGHTER BOARD



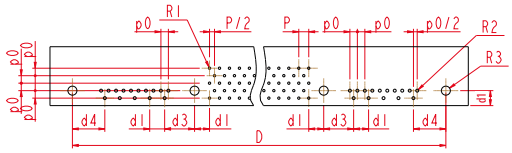
With Y0. male signal contacts and 5 coaxial contacts for plug

NX05-000 DAUGHTER BOARD



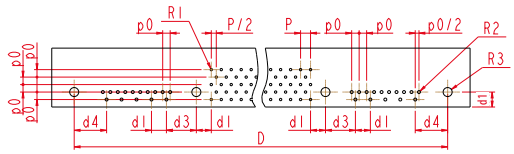
With Y0. male signal contacts and 10 coaxial contacts for plug

NX10-001 DAUGHTER BOARD



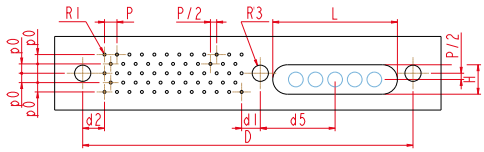
With Y0. male signal contacts and 10 coaxial contacts for plug

NX10-000 DAUGHTER BOARD



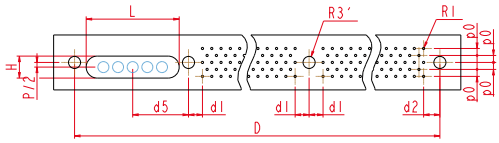
With Y09 female signal contacts and 5 coaxial contacts for receptacle

NT05-002 MOTHER BOARD



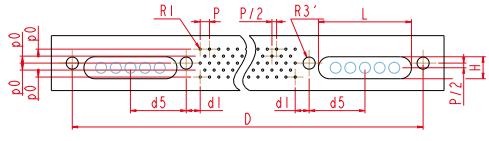
With Y09 female signal contacts and 5 coaxial contacts for receptacle

NT05-000 MOTHER BOARD



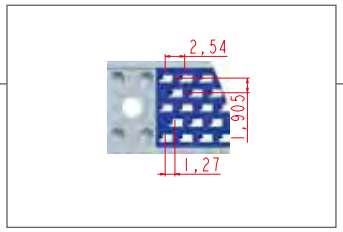
With Y09 female signal contacts and 10 coaxial contacts for receptacle

NT10-000 MOTHER BOARD



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

SIAL >> SIZE 12 COAXIAL VERSION (❸)

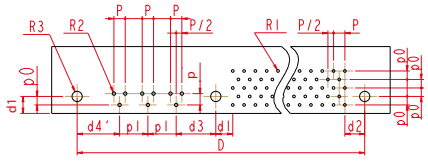


LAYOUTS

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

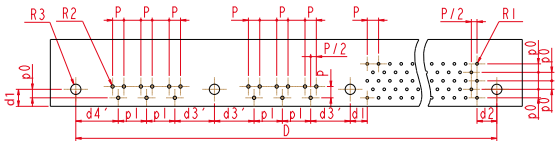
With Y male signal contacts and 3x320000 right angle dip solder coaxial contacts/plug

K(2)03-000 DAUGHTER BOARD



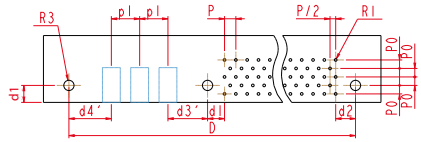
With Y0 male signal contacts and 6x320000 right angle dip solder coaxial contacts/plug

K(2)06-000 DAUGHTER BOARD



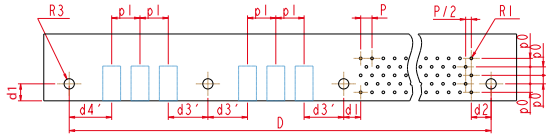
With Y male signal contacts and 3x900340 crimp coaxial contacts/plug

K(1)03-000 DAUGHTER BOARD



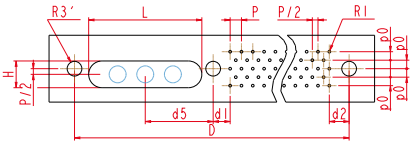
With Y0 male signal contacts and 6x900340 crimp coaxial contacts/plug

K(1)06-000 DAUGHTER BOARD



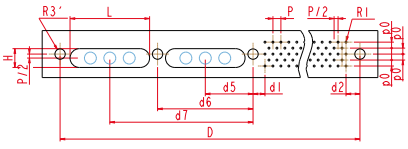
With Y09 female signal contacts and 3 coaxial contacts/receptacle

KT03-000 MOTHER BOARD



With Y09 female signal contacts and 6 coaxial contacts/receptacle

KT06-000 MOTHER BOARD



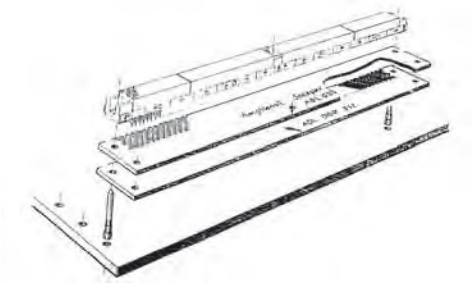
R_1	R_2	R_3	R_3'	p	p/2	p_1	p_0	$p_0/2$	L	H
Ø 0.6 MIN [.024]	Ø 0.75 MIN [.340]	Ø $2.3^{+0.15}_{-0.1}$ [$.091^{+.006}_{-.004}$]	Ø $3.3^{+0.15}_{-0.1}$ [$.130^{+.006}_{-.004}$]	2.54 [.100]	1.27 [.050]	6.35 [.250]	1.905 [.075]	0.9525 [.037]	25.4 MAX [1.000] 19 MIN [.748]	6 MIN [.236]

d_1	d_2	d_3	d_4	d_5	d_6	d_7	d_3'	d_4'
3.81 [.150]	4.445 [.175]	7.62 [.300]	8.255 [.325]	15.24 [.600]	30.48 [1.200]	45.72 [1.800]	8.89 [.350]	9.525 [.375]

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

SIAL >>> TOOLING

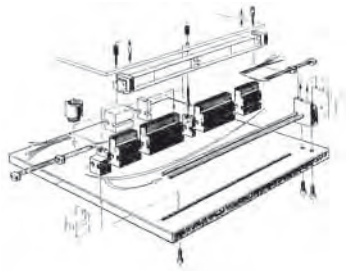
Receptacle mounting on mother board (Y09)



- Insertion of all connector sizes with Y09 dip solder contacts
- Into 0.6 mm [.024] thru plated holes
- Consult us for additional references

ASL ODP 058 ASL ODP 098 ASL ODP 116	ASL ODP 156 ASL ODP 254 ASL ODP 312

Plug mounting on daughter board (Y01 or Y02)



- Insertion of all connector sizes with Y01 or Y02 right angle dip solder contacts
- Into 0.6 mm [.024] thru plated holes
- Consult us for additional references

ASL ODI YC 312
ASL ODI YC 392

Plug mounting on daughter board (SMT)

- Insertion of all connector sizes with U04, U05, U06, U07 or U08 SMT contacts (Surface Mount Terminations)
- Consult us for additional references

ASL ODI SMT

Mounting tool for size 16 coax contacts

- On mother board or daughter board
- Consult us for additional references

ASL ODP NX05

Extraction tool for coax contacts

Size 12

809839

Size 16

ASL OD COAX FEMELLE TAILLE 16

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

NOTES

SIHD

The monolithic connector for use with thermal clamps

The SIHD connector combines excellent electrical performances with high contact density within a robust housing, which can withstand extreme environmental conditions. In addition, the lateral displacement capability allows the use of thermal clamps for heat management, as well as a more relaxed positional tolerance on the backplane. The optional central ground strip provides cross talk protection and permits the routing of differential pairs. Contacts can be repaired and replaced individually.

The ability to include ground strips

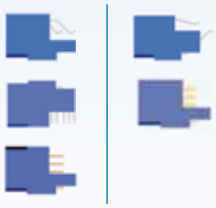
- Transmission of high-speed signals made easy by reducing self inductance with the inclusion of central ground strips
- Cross talk and self impedance levels reduced impedance 70Ω to 120Ω
- Capacitance distributed along signal contacts

Compatible with the use of thermal clamps

Its standard contact technology, already used in the SIAL connector, permits the lateral displacement (±0.25 [.010]) of the pin into the socket without generating any stress on the contact termination on the PCB.

This feature allows the use of thermal clamps to keep the daughter board in position after mating, as well as the dissipation of energy generated by the components on the board from the heat sink (thermal drain) to the cold wall (liquid cooled) or to the chassis. The locking of the thermal clamps provides the lateral movement of the plug into the receptacle. The SIHD allows this lateral displacement of ±0.25 [.010] without creating stress on the solder joints or on the contact area.

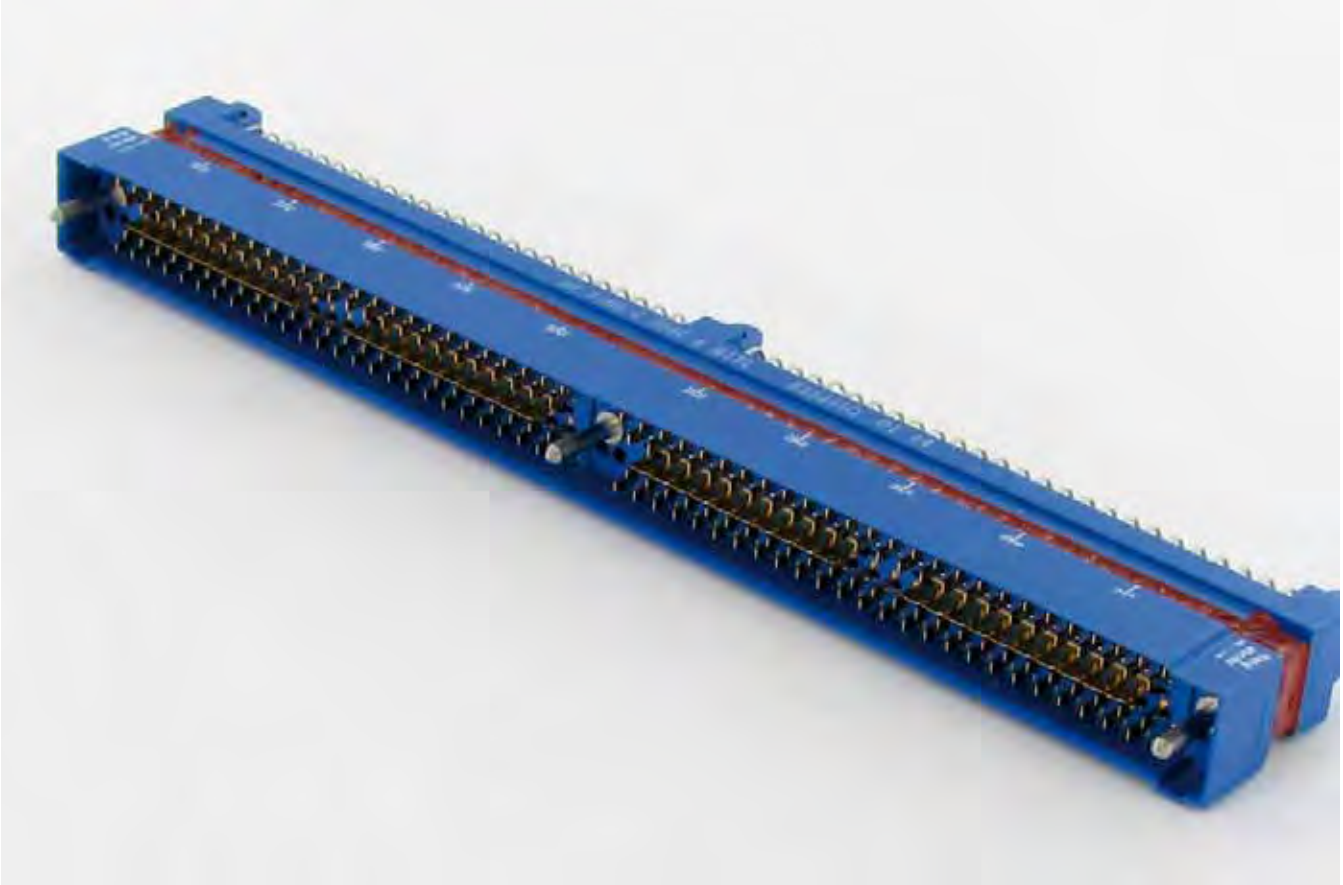
QUICK SELECTION GUIDE

Signal contacts ❶	Ground Strip ❷	Guiding ❸	Keying ❹	Fittings ❺	Housings ❻
FEMALE  **MALE** 	 Reduced cross talk level Reduced self impedance level Capacitance distributed along signal contacts	**A STYLE** **For M1W3 contacts**  **B STYLE** **For M1YD contacts**  *Fixing of receptacle*	**250 positions available**  10 holes 5 pins on the plug 5 pins on the receptacle	**For receptacles:** style A and B (guiding) **For plugs:** fixing on thermal drain or on PCB	**Without ground strip:** 128, 158, 256, 390 **With ground strip:** 102C, 204C, 230C
PAGE 90 | PAGE 91	PAGE 91	PAGE 92	PAGE 92	PAGE 93	PAGE 94

The SIHD series serves various markets, including:

Military avionics & airframe | Commercial avionics & airframe | Navy | Space

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



SIHD Series

The monolithic connector for use with thermal clamps

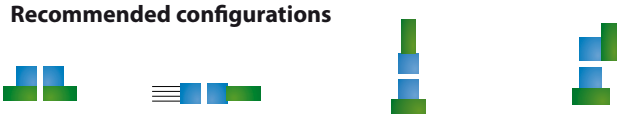
SIHD >>> GENERAL SPECIFICATIONS

MEDIUM DENSITY

- **2.54 [.100] staggered grid (1.27 [.050] offset), 1.905 [.075] between rows**
- **Lateral displacement capability allowing the use of thermal clamps: ± 0.25 [± .010]**
- **Possibility to have a central ground strip**
- **Designed for severe mechanical environments**
- **Low weight**

Terminations

Recommended configurations



Main characteristics

- High density: 0.14 cts/mm² [90 cts / inch²]
- 7 variations: 5 rows from 102 to 390 signal contacts
- 3 A per signal contacts / DWV: 750* Vrms
- Lateral rails to protect the male contact from external damage
- Repairable contacts

Markets

Main applications

How to order

F	Plug with female contacts
E	Receptacle with male contacts
P	Extender card for M1YC contacts (shroud aluminium)
G	Extender card for M1YC contacts (12.7 pitch)
Connector type	

C	Central ground strip
Ø	No ground strip
Ground strip *(see page 91)*	

A B C D E F K	F connector
A B	E connector
Fittings *(see page 93)*	

Ø	Gold on M1W3 terminations
6	Tin on M1W3 terminations
Plating (for M1W3 contacts only)	

SIHD - --- - - ---- -

Number of signal contacts *(see pages 94 to 95)*	
Without ground strip	With ground strip
128 **158** **256** **390**	**102** central ground strip **204** central ground strip **230** half central ground strip

Signal contacts *(see pages 90 to 91)*			
E connector	F connector	P connector	G connector
Wire wrap connections: **M1W3**	SMT double side: **F1U1 / F1U2 / F1U3**	Extender card: **M1YC**	Extender card: **M1YC**
Straight PC tail: **M1YD**	SMT single side: **F1TS**		
	Right angle PC tail: **F1YC**		
	Straight PC tail: **F1TS**		
	Crimping tail: **F1X1**		

* 375Vrms only for F1U2 cts

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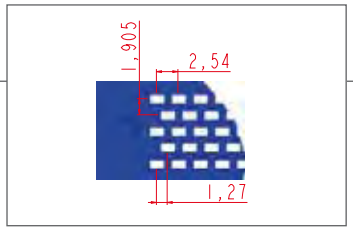
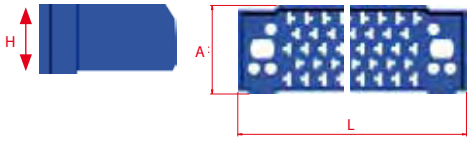
SIHD >>> TECHNICAL SPECIFICATIONS



DIMENSIONAL CHARACTERISTICS



H = 16.9 to 17.95 [.665 to .707] for plug
H = 10.22 to 11.15 [.402 to .439] for receptacle
A = 11.6 to 15 [.457 to .591]
L = 77.86 to 221 [3.065 to 8.701]

FEMALE CONTACT

Cross cavity by Amphenol: lateral displacement compatible

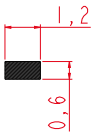
- Cross section of the lateral displacement of the male contact inside the female cavity
- Maintains 2 points of contact
- Allows a ± 0.25 [± .010] lateral displacement
- No stress on solder joints or on the contact area

Material: beryllium copper (stamped)

Plating:

- Terminations: gold over nickel on crimp contacts (F1X1)
  tin lead or lead free on other contacts (F1U1, F1U2, F1U3, F1TS, F1YC)
- Active contact area: gold over nickel

MALE CONTACT



Mating end size: 0.6 x 1.2 [.047 x .024]
Contact section (mating side)**:** 0.72 mm² [.001 in²]
Material: phosphorous bronze (stamped)
Plating:

- Terminations: gold over nickel on crimp contacts (M1W3)
  tin lead or lead free on straight PC tail contact (M1YD)
- Active contact area: gold over nickel

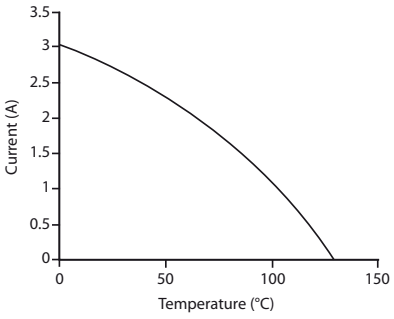
MATERIALS

- **Guiding devices:** passivated stainless steel 303
- **Polarising pins:** passivated stainless steel 303
- **Plastic insert:** thermoset DAP, 40% glass fiber filled

MECHANICAL CHARACTERISTICS	
Backoff[1] (mm)	1
Mating force per contact (N) **Unmating force** per contact (N)	0.58 MAX 0.16 < F < 0.58
Durability cycles	500
Sinusoidal vibrations (10 to 2000 Hz) micro discontinuity 10 ns - unloaded PCB - loaded PCB **Random vibrations** (50 to 2000 Hz) micro discontinuity 10 ns **Shocks** 6ms 1/2 sinus micro discontinuity 10 ns	 20 g 10 g 0,1 g²/Hz 100g
Recommanded tightening torques - nuts for Ø 2 mm screws, brass m.N - nuts for Ø 2.5 mm screws, brass m.N	 0.2 0.25
ENVIRONMENTAL CHARACTERISTICS	
Thermal shocks (°C)	-55 / +125
Salt Spray (hours)	96
Humidity **Days** **Temperature** (°C) **Humidity rate** (%)	 56 40 90-95
ELECTRICAL CHARACTERISTICS	
Current rating per contacts (A)	3 - See derating curve
Insulation resistance (GΩ)	5 MIN
Contact resistance (mΩ)	12 MAX
Dielectric Withstanding Voltage (Vrms)	750*
Capacitance between contacts (pF)	2.5 MAX
Self induction (nH)	25 MAX
Immunity against noise of groundings for connectors with central ground strips	Noise ≤ 400mV for 0.1 A intensity per contact and signal rise time of 2ns

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

Derating Curve

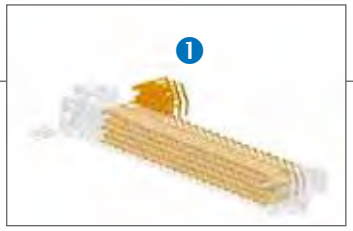


* 375Vrms only for F1U2 cts

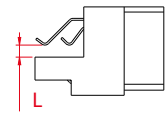
All dimensions are given for information only and are in mm [inch], except as otherwise specified

SIHD >>> SIGNAL CONTACTS (1)

FEMALE CONTACTS FOR PLUGS WITHOUT GROUND STRIP



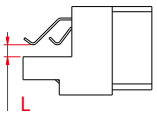
Double sided SMT



- SMT soldering
- Double sided daughter board
- Surface mount area: 0.7x0.8 [.028x.031]
- PCB thickness: 2.3 to 3.2 [.091 to .126]

Termination style	F1U1

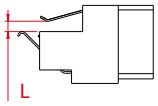
Double sided SMT



- SMT soldering
- Double sided daughter board
- Surface mount area: 0.7x0.8 [.028x.031]
- PCB thickness: 4.56 to 5.37 [.180 to .211]

Termination style	F1U2

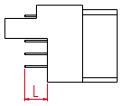
Double sided SMT



- SMT soldering
- Double sided daughter board, offset
- Surface mount area: 0.7x0.8 [.028x.031]
- PCB thickness: 1.8 to 2.65 [.071 to .104]

Termination style	F1U3

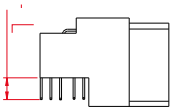
Straight solder PC tail



- Straight solder PC tail
- Thru hole soldering
- Daughter board

Termination style	F1TS

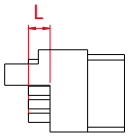
Right angle solder PC tail



- Thru hole soldering
- Daughter board
- PCB thickness
  With heat sink: 2.9 to 3.41[.114 to .134]
  Without heat sink: 1.4 to 1.8 [.055 to.071]

Termination style	F1YC

Crimp barrel



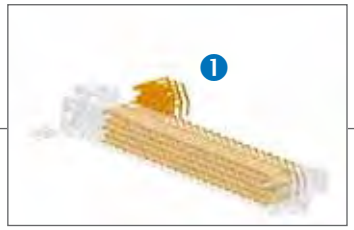
- Crimping on wire
- AWG gauge 22 to 28

Termination style	F1X1

	F1U1	F1U2	F1U3	F1TS	F1YC	F1X1
L_{MAX}	3.21 [.126]	5.37 [.211]	2.65 [.104]	5.5 [.217]	With heat sink: 4.4 [.173] Without heat sink: 2.8 [.110]	2.9 [.114]
Termination section	0.6 x 0.25 [.024 X .010]				Ø 0.5 ± 0.03 [.020 ± .001]	Ø 1.3 [.051]
Active contact area plating µm [µin]	2 [.080] Ni + **1 [.039] Au**					
Termination plating µm [µin]	2 [.080] Ni + 7 [.276] SnPb or bright pure Sn for RoHS version				2 [.080] Ni + 3 [.118] SnPb or bright pure Sn for RoHS version	2 [.080] Ni + **1 [.039] Au**

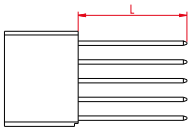
All dimensions are given for information only and are in mm [inch], except as otherwise specified

SIHD >>> SIGNAL CONTACTS & GROUND STRIP TECHNOLOGY (❶ & ❷)



MALE CONTACTS FOR RECEPTACLES WITHOUT GROUND STRIP (❶)

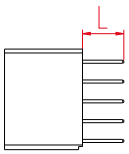
Wire-wrap



- Wire wrap connections
- Mother board
- AWG gauge 28 to 30

Termination style **M1W3**

Straight solder PC tail



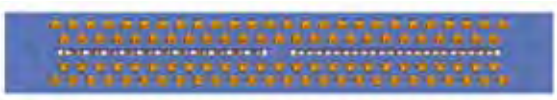
- Thru hole soldering
- Mother board
- PCB thickness: up to 4.3 ± 0.3 [.169 ± .012]

Termination style **M1YD**

	M1W3	M1YD
L	14.75 ± 0.45 [.581 ± .018]	5.3 ± 0.3 [.209 ± .012]
Termination section	Ø 0.82 ± 0.04 [.032 ± .002]	Ø 0.5 ± 0.03 [.020 ± .001]
Mating end size	1.2 x 0,6 [.024 x .047]	
Active contact area plating µm [µin]	2 [.080] Ni + **1 [.039] Au**	
Termination plating µm [µin]	2 [.080] Ni + **0.2 [.008] Au** for standard version or 2 [.080] Ni + 3 [.118] SnPb for tinned version or 2 [.080] Ni + 3 [.118] bright pure Sn for RoHS version	2 [.080] Ni + 3 [.118] SnPb or bright pure Sn for RoHS version

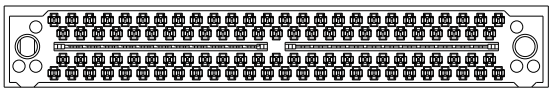
GROUND STRIP TECHNOLOGY (❷)

Ground strip benefits



- Reduced cross talk level
- Impedance 70Ω to 120Ω
- Reduced self impedance level
- Capacitance distributed along signal contacts

Central ground strip technology



Arrangements available: 102 & 204 signal contacts
Compatibility: M1YD, M1W3, F1YC, F1U1, F1U2 & F1U3

Note: ground strip has the same termination and active contact area platings as the contacts with which its mounted

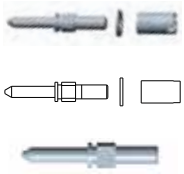
All dimensions are given for information only and are in mm [inch], except as otherwise specified

SIHD >>> GUIDING (❸) & KEYING (❹)

GUIDING (❸)

The guides are the fixing accessories for receptacles

A style

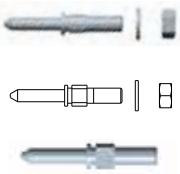


Receptacles with M1W3 contacts are delivered with:
- 3 guides
- 3 washers
- 3 cylindrical nuts

Passivated stainless steel

SIHD E --- A M1W3	**A**

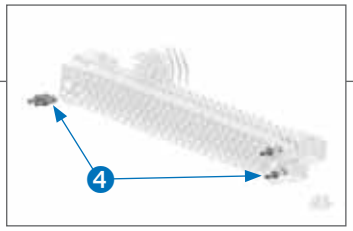
B style



Receptacles with M1YD contacts are delivered with:
- 3 guides
- 3 washers
- 3 hexagonal nuts

Passivated stainless steel

SIHD E --- B M1YD	**B**

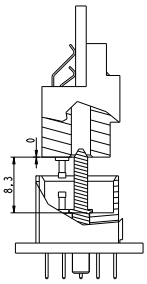
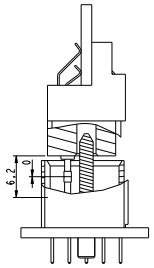
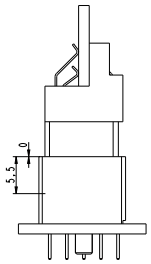
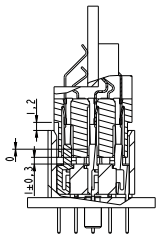
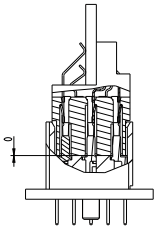


KEYING (❹)

Polarizing pins

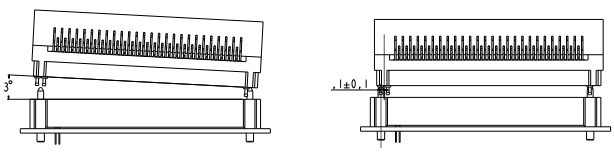
- More than 250 different positions available
- 5 pins delivered with each connector – Plug and receptacle have 10 holes
- Among the 10 holes of the plug, 5 of them have to be equipped with one pin
- Among the 10 holes of the receptacle, 5 of them have also to be equipped with one pin
- If pins are located in opposite holes for both plug and receptacle, mating is not possible

MATING SEQUENCE

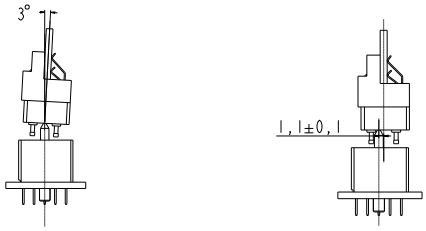
Guiding	Keying	Housing contact	Signal contact	Mated connector
				
8.3 [.327]	6.2 [.244]	5.5 [.217]	1 ± 0.3 [.039 ± .012] 1.2 [.047]	0

REALIGNMENT CAPABILITY

In the longitudinal axis



In the lateral axis



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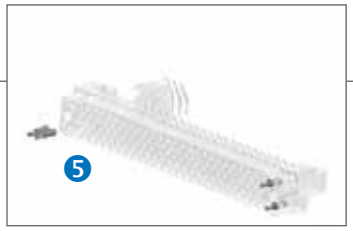
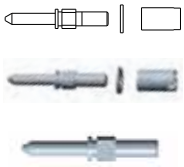
SIHD >>> FIXING ACCESSORIES (❺)



FIXING ACCESSORIES FOR RECEPTACLES = GUIDING

A style

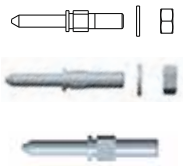


Receptacles with M1W3 contacts are delivered with:
- 2 or 3 guides
- 2 or 3 washers
- 2 or 3 cylindrical nuts

Passivated stainless steel

SIHD E --- A M1W3	A

B style



Receptacles with M1YD contacts are delivered with:
- 2 or 3 guides
- 2 or 3 washers
- 2 or 3 hexagonal nuts

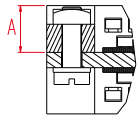
Passivated stainless steel

SIHD E --- B M1YD	B

FIXING ACCESSORIES FOR PLUGS

PCB with a thermal drain

A style - For F1U1/F1U2 female contacts

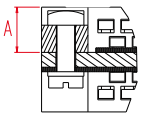


- Mounted to heat sink
- PCB with a heat sink

Passivated stainless steel

SIHD F --- A F1U1 SIHD F --- A F1U2	A

B style - For F1U1 female contacts

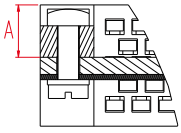


- Mounted to PCB
- PCB with a heat sink

Passivated stainless steel

SIHD F --- B F1U1	B

C style - For F1YC/F1T female contacts



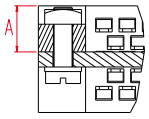
- Mounted to PCB
- PCB with a heat sink

Passivated stainless steel

SIHD F --- C F1YC SIHD F --- C F1T	C

PCB without a thermal drain

D style - For F1YC female contacts

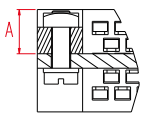


- Mounted to PCB
- PCB without a heat sink

Passivated stainless steel

SIHD F --- D F1YC	D

E style - For F1U3 female contacts

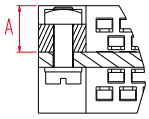


- Mounted to PCB
- PCB without a heat sink

Passivated stainless steel

SIHD F --- E F1U3	E

F style - For F1X1 female contacts



- Mounted to PCB
- PCB without a heat sink

Passivated stainless steel

SIHD F --- F F1X1	F

	Fixing accessories for plugs equipped with female contacts					
	A style	B style	C style	D style	E style	F style
A_{MIN}	F1U1 4.16 [.164] F1U2 3.08 [.121]	F1U1 4.16 [.164]	F1YC 7.72 [.304]	F1YC 7.62 [.300]	F1U3 7.61 [.300]	F1X1 4.93 [.194]

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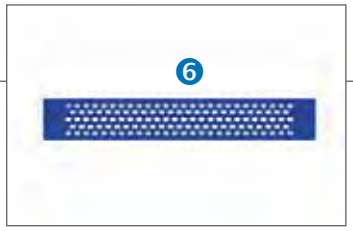
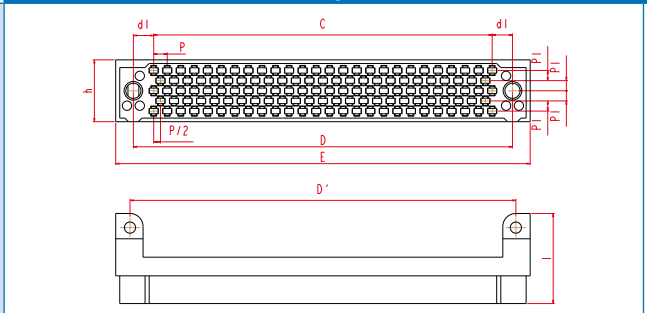
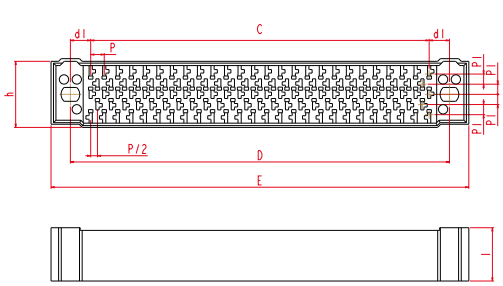
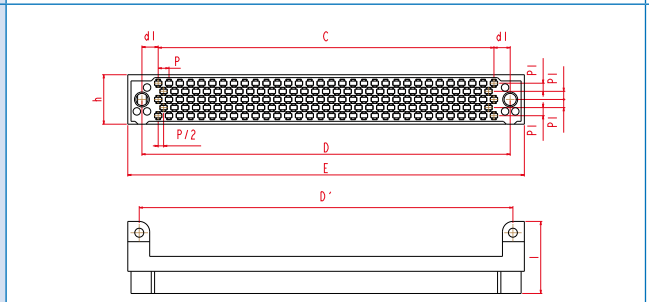
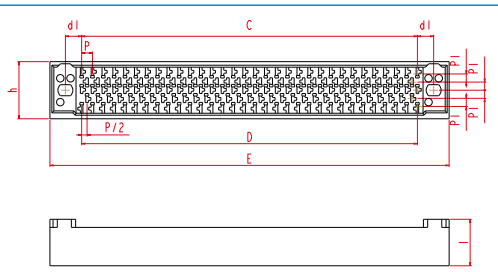
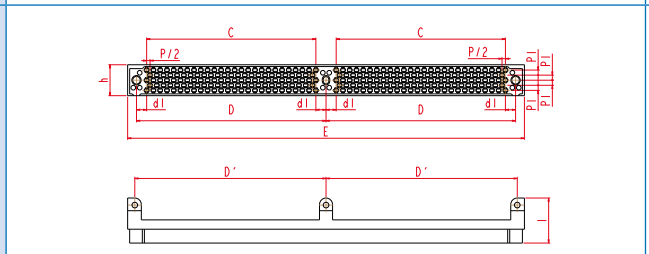
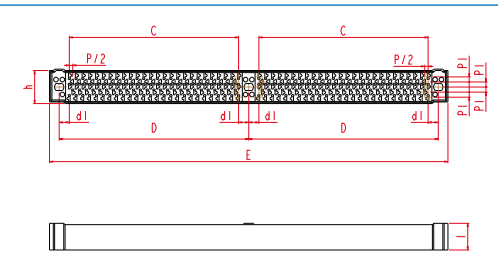
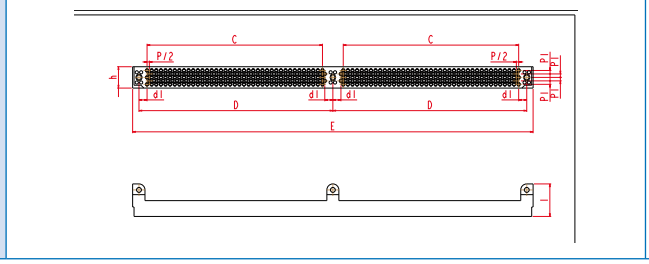
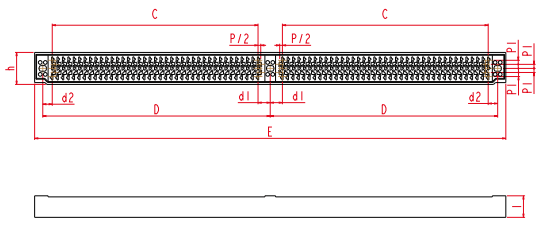
SIHD >>> WITHOUT GROUND STRIP (6)



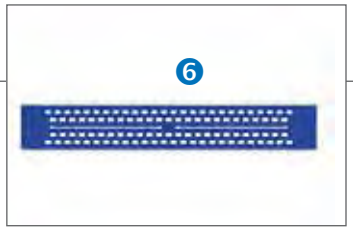
ARRANGEMENTS

	Plug	Receptacle
128		
158		
256		
390		

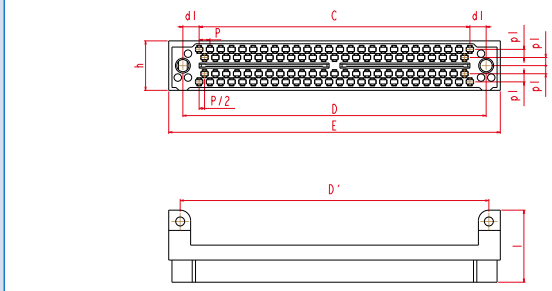
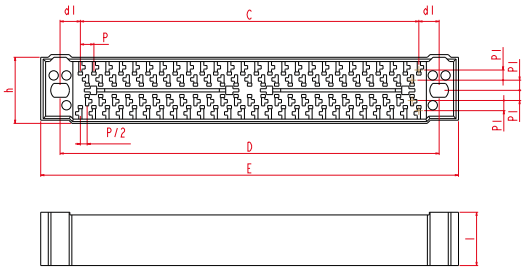
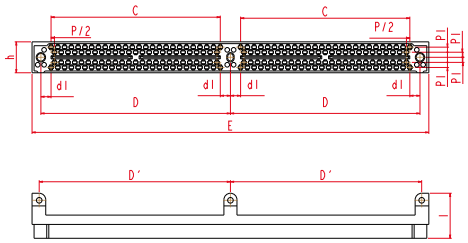
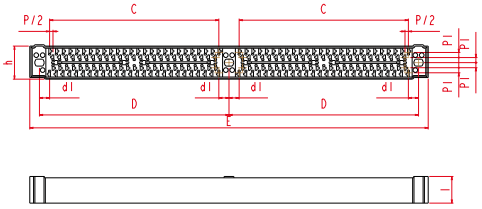
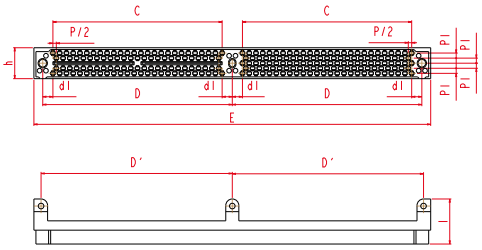
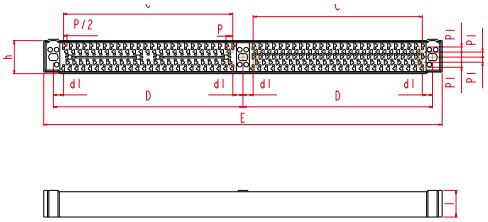
Nb of contacts	128		158		256		390	
	Plug	Receptacle	Plug	Receptacle	Plug	Receptacle	Plug	Receptacle
C	63.5 [2.500]		78.74 [3.100]		63.5 [2.500]		96.52 [3.800]	
D	71.12 [2.800]		86.36 [3.400]		71.12 [2.800]		106.68 [4.200]	
E_{MAX}	77.86 [3.065]	78.38 [3.086]	93.1 [3.665]	93.62 [3.686]	148.98 [5.865]	149.5 [5.886]	220.35 [8.675]	221 [8.701]
h_{MAX}	11.6 [.457]	12.4 [.488]	11.6 [.457]	13.4 [.528]	11.6 [.457]	12.4 [.488]	11.75 [.463]	15 [.591]
D'	72.39 [2.850]	/	87.63 [3.450]	/	71.755 [2.825]	/	106.68 [4.200]	/
I_{MAX}	16.9 [.665]	10.3 [.406]	16.9 [.665]	11.15 [.439]	16.9 [.665]	10.3 [.406]	17.95 [.707]	10.2 [.402]

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

SIHD >>> WITH GROUND STRIP (⑥)



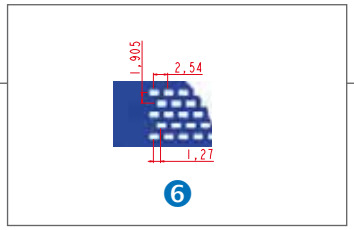
ARRANGEMENTS

	Plug	Receptacle
128		
204		
230		

	Plug			Receptacle		
Nb of contacts	**102**	**204**	**230**	**102**	**204**	**230**
C	63.5 [2.500]					
D	71.12 [2.800]					
E_{MAX}	77.86 [3.065]	148.98 [5.865]		78.38 [3.086]	149.5 [5.886]	
h_{MAX}	11.6 [.457]			12.4 [.488]		
D'	72.39 [2.850]	71.755 [2.825]		/		
l_{MAX}	16.9 [.665]			10.3 [.406]		

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

SIHD >>> WITHOUT GROUND STRIP (⑥)

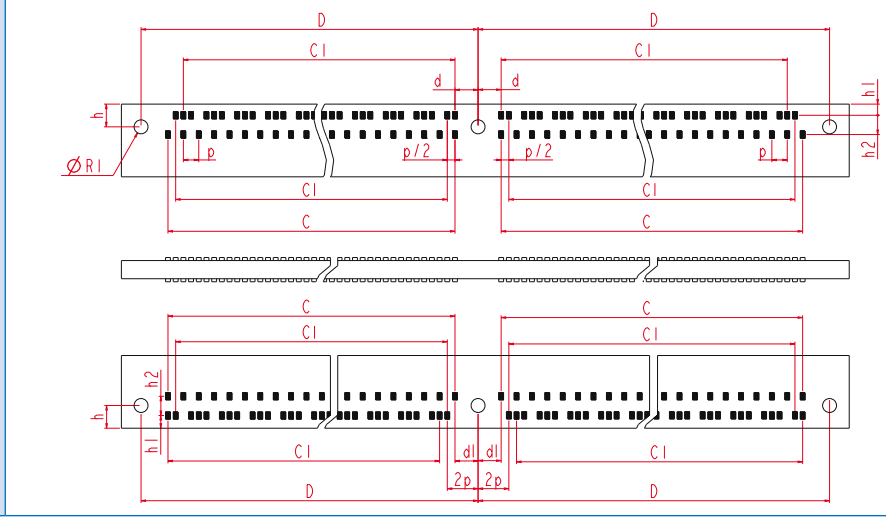


LAYOUTS

The boards are shown from the connector side.
All contact locations are equidistant.
n indicates the total number of signal contacts.

F1U1/F1U2 CONTACT (female for plug)*

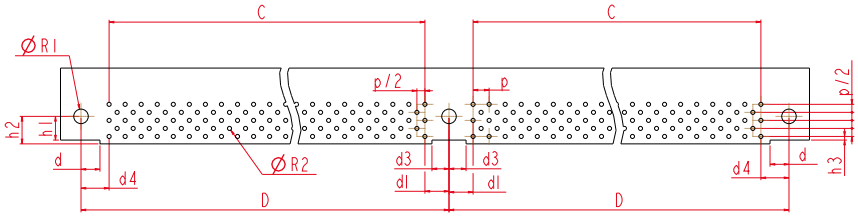
n = 128, 158, 256 or 390



C_1	C - p = C -2.54
C	See pages 94 & 95
D	See pages 94 & 95

F1YC CONTACT (female for plug)*

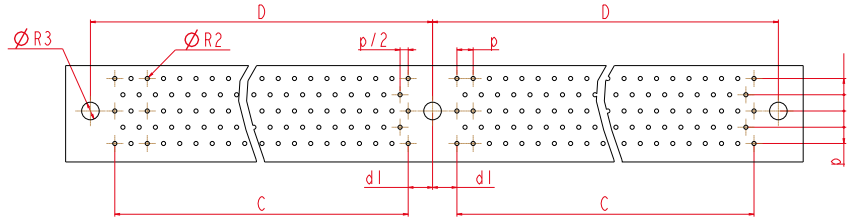
n = 128, 158, 256 or 390



C	See pages 94 & 95
D	See pages 94 & 95

M1W3/M1YD (male for receptacle)*

n = 128, 158, 256 or 390



C	See pages 94 & 95
D	See pages 94 & 95

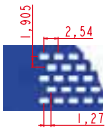
R1	R2	R3	h	h1	h2	h3	$h2_{MAX}$
Ø 2.3 $^{+0.05}_{+0}$ [.091 $^{+.002}_{+0}$]	Ø 0.6 $_{MIN}$ [.024] 0.9 $_{MIN}$ for W3 contacts	Ø 2.75 $^{+0.05}_{+0}$ [.108 $^{+.002}_{+0}$]	3.75 [.148]	1.845 [.073]	3.175 [.125]	0.575 [.023]	4.35 $_{MAX}$ [.171]

d1	d2	d3	d4	d5	p1	p	2p	p/2
3.81 [.150]	4.445 [.175]	2.7 $^{+0.1}_{+0}$ [.106 $^{+.004}_{+.000}$]	4.47 [.176]	3 ± 0.1 [.118 ± .004]	1.905 [.075]	2.54 [.100]	5.08 [.200]	1.27 [.050]

** in mm: 1mm = 0.03937 inch*

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

SIHD >>> WITH GROUND STRIP (⑥)



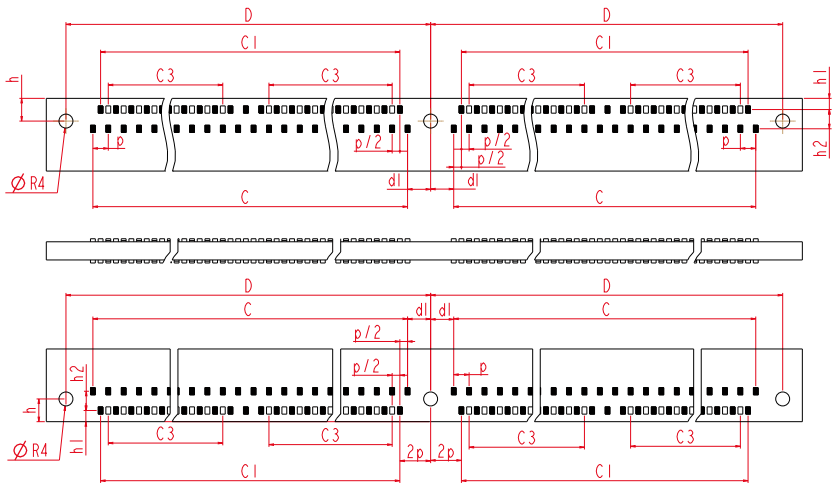
⑥

LAYOUTS

The boards are shown from the connector side.
All contact locations are equidistant.
n indicates the total number of signal contacts.

F1U1/F1U2 CONTACT (female for plug)*

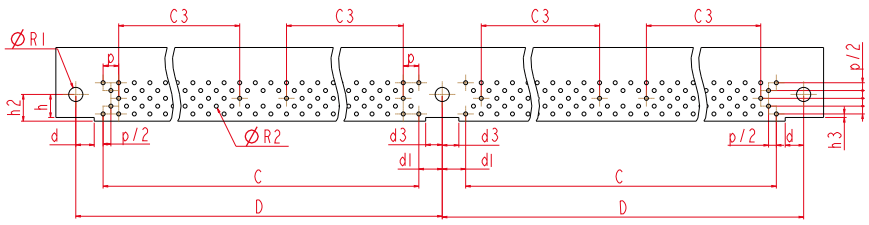
n = 102, 204 or 230



C_1	C - p = C - 2.54
C_3	(C - 5p) / 2
C	See pages 94 & 95
D	See pages 94 & 95

F1YC CONTACT (female for plug)*

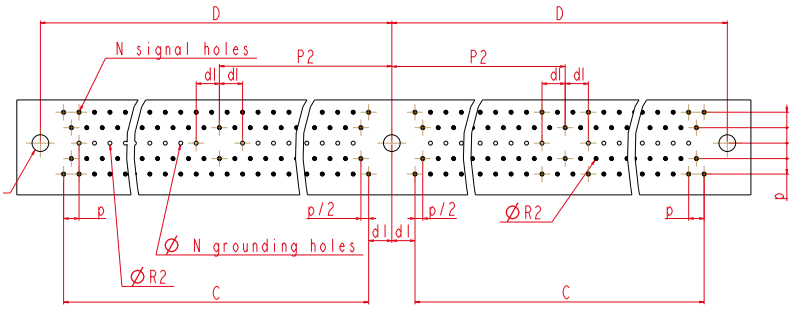
n = 102, 204 or 230



C_1	C - p = C - 2.54
C_3	(C - 5p) / 2
C	See pages 94 & 95
D	See pages 94 & 95

M1W3/M1YD (male for receptacle)*

n = 102, 204 or 230



P_2	C / 2
C	See pages 94 & 95
D	See pages 94 & 95

R1	R2	R3	R4	p1	p	2p	p/2
Ø 2.3 $^{+0.05}_{+0}$ [.091 $^{+.002}_{+0}$]	Ø 0.6 $_{MIN}$ [.024] 0.9 $_{MIN}$ for W3 contacts	Ø 2.75 $^{+0.05}_{+0}$ [.108 $^{+.002}_{+0}$]	Ø 2.7 $_{MAX}$ [.106]	1.905 [.075]	2.54 [.100]	5.08 [.200]	1.27 [.050]

d1	d3	d5	h	h1	h2	h3	$h2_{MAX}$
3.81 [.150]	2.7 $^{+0.1}_{+0}$ [.106 $^{+.004}_{+.000}$]	3 ± 0.1 [.118 ± .004]	3.75 [.148]	1.845 [.073]	3.175[.125]	0.575 [.023]	4.35 $_{MAX}$ [.171]

** in mm: 1mm = 0.03937 inch*

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

127 / HE8
The well proven technology

The 127 series is a medium-density range of multi-contact plug-in connectors for printed circuit boards. This range of 2.54 [.100] staggered grid, low profile connectors meets the common harsh environmental requirements.
A wide range of fittings and guides, as well as numerous contact terminations, provide more flexibility to PCB designers.

A well-proven technology

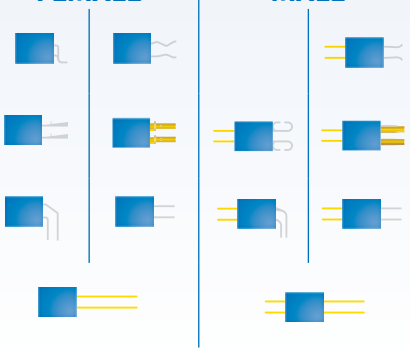
- The 127 series uses a 2.54 [.100] staggered grid pitch with 2.54 [.100] between rows, Available in 2 or 3 rows.
- The contact technology is based on the tuning fork and blade concept. Using advanced copper alloys provides optimized electrical conductivity as well as long-term mechanical reliability.

A large choice of attachments on Printed Circuit Boards

- Different styles, from 17 to 144 contacts with various terminations: straight, right angled 90°, crimp barrel, solder cup, SMT and wire-wrapping.
- Hybrid patterns, with a combination of 3 to 10 special cavities, permit the usage of coaxial, power contacts, as well as optical termini.

The 127 series connectors are available in 3 different versions: HE801 / HE804 / HE807

QUICK SELECTION GUIDE

Signal contacts ❶	Special contacts ❷	Keying & Guiding ❸	Connector type
FEMALE / **MALE** 	**POWER 10A**  **POWER 20A**  **COAXIAL** 	**NON KEYING** **KEYING** **LOCKING** **NON LOCKING**	**HE801** Round male contact Standard molding size **HE804** Rectangular male contact Molding smaller in size **HE807** Hybrid cavities
PAGE 52 / **PAGE 53**	**PAGE 54**	**PAGE 56**	**PAGE 51**

The 127 series serves various markets, including:

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

This proven range of PCB connectors complies with numerous international standards:

NFC UTE 93424
HE801, HE804 & HE807

BS9525
N0001, F0006, F0007

MIL-DTL-55302
140 to 155

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

127 / HE8 Series

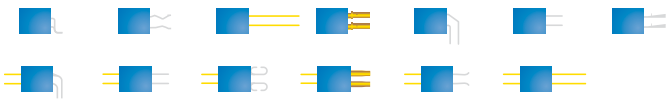
Proven, reliable and robust connectors

127 / HE8 >>> GENERAL SPECIFICATIONS

MEDIUM DENSITY

- 2.54 [.100] staggered grid (1.27 [.050] offset), 2.54 [.100] between rows
- Proven, reliable and robust rectangular PCB connectors
- Numerous contact terminations and fittings
- Hybrid patterns with power or coax contacts

Terminations



Recommended configurations

Standards

NFC UTE 93424
HE801, HE804 & HE807

BS9525
N0001, F0006, F0007

MIL-DTL-55302
140 to 155

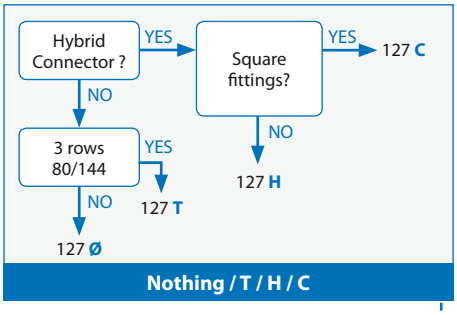
Main characteristics

- Density: 0.11 cts / mm² [71 cts / inch²]
- 17 to 144 signal contacts
- 0 to 10 special contacts
- 3 A per signal contacts
- Fully compatible with all the standard connectors HE801, HE804 & HE807 on the market

Markets

Main applications

How to order



Reference	Codable	Lockable
Fittings for receptacle (X: No fittings)		
K / A / P / B / KE / AE / L	Yes	No
S / D / SC / DC	No	Yes
KD / AD / KED / AED / KT / AT / KET / AET	Yes	Yes
Fittings for plug (XL: No fittings)		
A / J / H / N / V / E / R	Yes	No
PA / PC / T	No	No
D / S / NF / EF / RF	No	Yes
AS / JS / NS / ES / RS / ET / RT	Yes	Yes

Fittings *(see pages 106 to 113)*

Socket	Pin	Description
YC		Right angle PC tail
YL		Long right angle PC tail
T		SMT with metallized terminals
U		SMT double sided
Y		Straight PC tail
YD		Straight PC tail (for HE804 connector only)
W3		Wire wrap connections
Z	ZC	Solder on wire
X1**	X**	Crimping tail
ØØ	ØØ	No signal contacts (HE807)

Signal contacts *(see pages 102 to 105)*

Contacts
F: Socket / M: Pin

Cavities marking*
Ø: normal
B: reversed

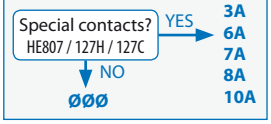
127 - --- --- - - - - --- - --- -

Number of signal contacts

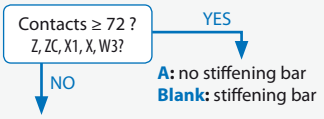
127 H or 127 C	0 5 48 56 60	17 29 41 53
127 Ø	33 65 96	72 84
127 T 3 rows	80 144	

Fitting material
Ø: nickel over brass
1: passivated stainless steel

Number of cavities for special contacts *(see page ??)*

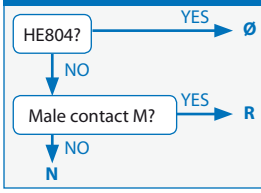


Stiffening bar



Plating
1: Tin lead on YC/Y/ZC/U/YL/YD & Gold on W3/X/X1
4: Bright pure tin (RoHS)
6: Tin lead on W3

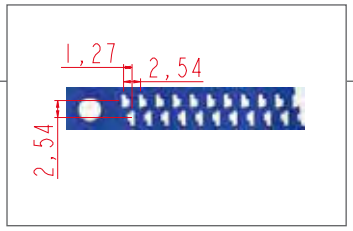
Version



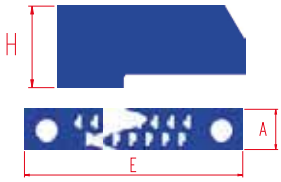
* Asymmetrical arrangements with female contacts always have plug marking. Asymmetrical arrangements with male contacts always have receptacle marking.
** Not available for HE801 and HE807 connectors.

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

127 / HE8 >>> TECHNICAL SPECIFICATIONS



DIMENSIONAL CHARACTERISTICS



H = 7.9 [.311] for HE801 & HE807 connectors
H = 6.9 [.272] for HE804 connectors
A = 6.3 [.248] for 2-row connectors
A = 8.55 to 8.94 [.337 to .352] for 3-row connectors
E = 37.5 to 144.2 [1.476 to 5.677]

FEMALE CONTACT

Female tuning fork contact
- Compatible with other technologies

Material
- CuSn9P (blade)

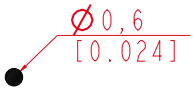
Plating
- Terminations: gold on W3, X & X1 and tin lead or bright pure tin on YD, Y, Z, YC, YL, T & U
- Active contact area: gold

MARKING

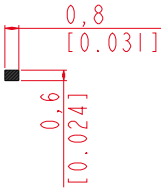
Plug marking

Receptacle marking

MALE CONTACT



- **For HE801 & HE807 connectors**
- **Contact section:** 0.28mm² [.0004 inch²]



- **For HE804 connectors**
- **Contact section:** 0.48mm² [.0007 inch²]

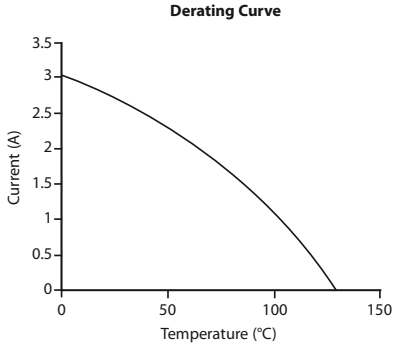
Material: CuZn (blade)
Plating
- Terminations: gold on W3, X & X1 and tin lead or bright pure tin on YD, Y, Z, YC, YL, T & U
- Active contact area: gold

MATERIALS

- **Fittings:** electroless nickel over brass or passivated stainless steel (303 ASTM)
- **Plastic insert:** thermoset DAP, 30% glass-fiber filled

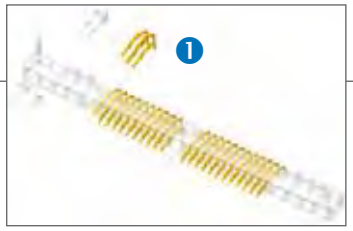
	HE801	HE804	HE807
MECHANICAL CHARACTERISTICS			
Backoff[1] (mm)	1 MAX [.039]	1 MAX [.039]	1 MAX [.039]
Mating force per contact (N)	1.60 MAX	1.60 MAX	1.60 MAX
Unmating force per contact (N)	0.14 MIN	0.14 MIN	0.14 MIN
Durability cycles	500	500	250
Vibrations (20 to 2000 Hz) micro discontinuity 1µs	10 g	10 g	10 g
Shocks micro discontinuity 1µs	100 g	100 g	100 g
Recommanded tightening torques			
- nuts for Ø 2.5mm screws, brass m.N	0.25	0.25	0.25
- nuts for Ø 1.6mm screws, brass m.N	0.15	0.15	0.15
ENVIRONMENTAL CHARACTERISTICS			
Thermal shocks (°C)	-55 / +125	-55 / +125	-55 / +125
Salt Spray hours	96	96	96
ELECTRICAL CHARACTERISTICS			
Current rating per contacts (A)	See derating curve	See derating curve	See derating curve
Insulation resistance (GΩ)	5 MIN	5 MIN	5 MIN
Contact resistance (mΩ)	12 MAX	12 MAX	12 MAX
Dielectric Withstanding Voltage (Vrms)	1 000	1 000	1 000
Capacitance between contacts (pF)	5 MAX	5 MAX	5 MAX
Service voltage at 50 Hz (Vrms)	250	250	250

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



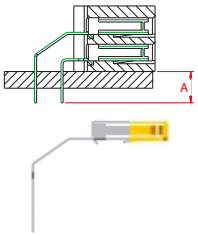
All dimensions are given for information only and are in mm [inch], except as otherwise specified

127 / HE8 >>> SIGNAL CONTACTS (❶)



FEMALE CONTACTS

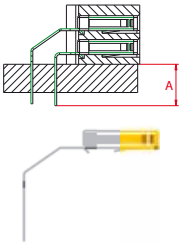
Right angle PC tail



- Thru hole soldering
- Single or double sided daughter board
- Termination section: 0.5 x 0.2 [.020 x .008]
- PCB thickness: 2.5 $_{MAX}$ [.098]

← Termination style **YC**

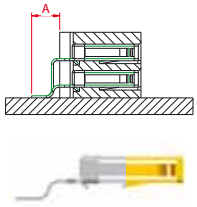
Long right angle PC tail



- Thru hole soldering
- Single or double sided daughter board
- Termination section: 0.5 x 0.2 [.020 x .008]
- PCB thickness: 3.5 $_{MAX}$ [.138]

← Termination style **YL**

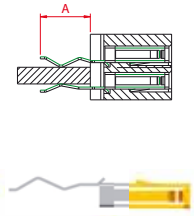
SMT single side



- SMT soldering
- Single side daughter board
- Surface mount area: 1.6 x 0.5 [.063 x .020]

← Termination style **T**

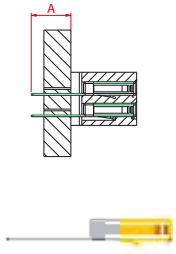
SMT double side



- SMT soldering
- Double side daughter board
- Surface mount area: 0.8 x 0.2 [.032 x .008]
- PCB thickness: 1.6 ± 0.3 [.063±.012]

← Termination style **U**

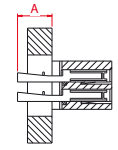
Straight PC tail



- Thru hole soldering
- Mother board
- Termination section: 0.5 x 0.2 [.020 x .008]
- PCB thickness: 3.2 [.126]

→ Termination style **YD/Y**

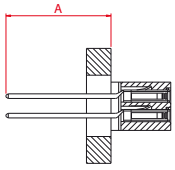
Solder cup



- Hard-soldering on wire
- Ø: 1 mm $_{MAX}$ [.039] on core section 0.78 mm² [.0012 inch²]
- Termination section: 1.5 x 1.2 [.059 x .047]
- PCB thickness: 3.2 [.126]

← Termination style **Z**

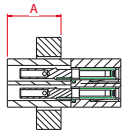
Wire-wrap



- Wire wrap connections
- AWG gauge 28 to 30
- Termination section: 0.6 x 0.6 [.024 x .024]
- PCB thickness: 3.2 [.126]

→ Termination style **W3**

Crimp barrel



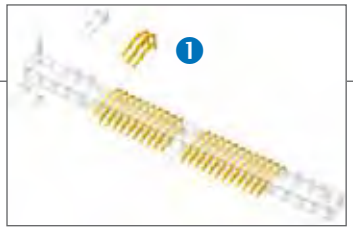
- Crimping on wire
- AWG gauge 22 to 26
- Terminations protected by a casing cemented to the moulding
- PCB thickness: 3.2 [.126]

← Termination style **X1**

	YC	YL	T	U	YD	Y	Z	W3	X1
A $_{MAX}$ for HE801/HE807	3 [.118]	4 [.157]	2.8 [.110]	5.5 [.217]	4.7 [.185]	4.9 [.193]	4.5 [.177]	14.1 [.555]	7 [.276]
A $_{MAX}$ for HE804			3.8 [.150]	6.5 [.256]			5.5 [.217]	15 [.591]	8 [.315]
Active contact area plating µm [µin]	2 [.080] Ni + **1 [.040] Au**						2 [.08] Ni + **1 [.040] Au**		
Termination plating µm [µin]	2 [.080] Ni + 3 to 6 [.120 to .240] SnPb or bright pure Sn for RoHS version						2 [.08] Ni + **0.2 [.008] Au**		

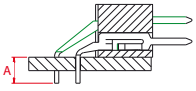
All dimensions are given for information only and are in mm [inch], except as otherwise specified

127 / HE8 >>> SIGNAL CONTACTS (❶)



MALE CONTACTS

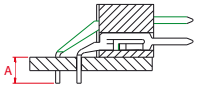
Right angle PC tail



- Thru hole soldering
- Single or double sided daughter board
- Termination section: 0.35 x 0.35[.014 x .014]
- PCB thickness: 2.6 [.102]

← Termination style **YC**

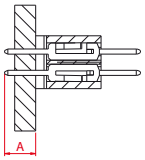
Long right angle PC tail



- Thru hole soldering
- Single or double sided daughter board
- Termination section: 0.35 x 0.35[.014 x .014]
- PCB thickness: 3.7 [.146]

← Termination style **YL**

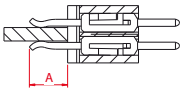
Straight PC tail



- Thru hole soldering
- Mother board
- Termination section: 0.35 x 035 [.014 x .014]
- PCB thickness: 3.2 [.126]

→ Termination style **Y**

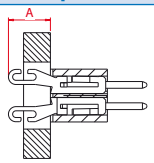
SMT double side



- SMT soldering
- Double sided daughter board
- Surface mount area: 0.64 x 0.6 [.025 x .024]
- PCB thickness: 1.6 ± 0.3 [.063 ± .012]

← Termination style **U**

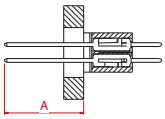
Solder cup



- Hard-soldering on wire
- Ø: 1 $_{MAX}$ [.039] on core section 0.78 mm² [.0012inch²]
- PCB thickness: 3.2 [.126]

← Termination style **ZC**

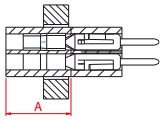
Wire-wrap



- Wire wrap connections
- AWG gauge 28 to 30
- Termination section: 0.6 x 0.6 [.024 x .024]
- PCB thickness: 3.2 [.126]

→ Termination style **W3**

Crimp barrel



- Crimping on wire
- AWG gauge 22 to 26
- Terminations protected by a casing cemented to the moulding
- PCB thickness: 3.2 [.126]

← Termination style **X**

The mention → or ← means the contact removal direction.

	YC	YL	Y	U	ZC	W3	X
A $_{MAX}$ for HE801/HE807	3.1 [.122]	4.2 [.165]	5.05 [.199]	4.2 [.165]	4.3 [.169]	15.05 [.593]	7 [.276]
A $_{MAX}$ for HE804			5 [.197]	5.2 [.205]	5.3 [.209]	13.2 [.520]	8 [.315]
Active contact area plating µm [µin]	2 [.080] Ni + **1 [.040] Au**					2 [.080] Ni + **1 [.040] Au**	
Termination plating µm [µin]	2 [.080] Ni + 3 to 6 [.120 to .240] SnPb or bright pure Sn for RoHS version					2 [.080] Ni + **0.2 [.008] Au**	

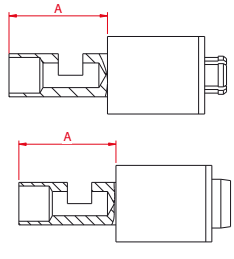
All dimensions are given for information only and are in mm [inch], except as otherwise specified

127 / HE8 >>> SPECIAL CONTACTS (❷)

POWER CONTACTS**

Current rating 10A

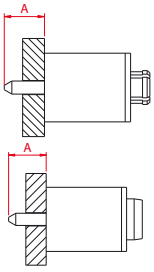
Solder cup



- Hard soldering on wire
- Wire diameter up to 2 [.079]
- Termination section: Ø 3.6 [.142]
- Current rating 10A

Pin	M121*
Socket	F121*

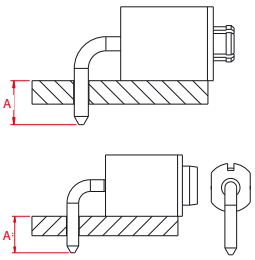
Straight PC tail



- Thru hole soldering
- Mother board
- Termination section: Ø 1.2 [.047]
- PCB thickness: up to 3.2 MAX [.126]
- Current rating 10A

Pin	M141*
Socket	F141*

Right angle PC tail



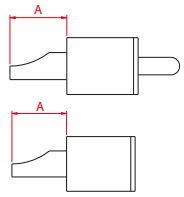
- Thru hole soldering
- Daughter board
- Termination section: Ø 1.2 [.047]
- PCB thickness: 1.6 to 2.4 [.063 to .095]
- Current rating 10A

Pin	M132*
Socket	F132*

Current rating at 5V (A)	10
Maximum current rating at 5V (A)	15
Contact resistance (mΩ)	12 MAX
Operating temperature rise (°C)	20 MAX
Contact retention (N)	50 MIN
Insertion and extraction force per contact (N)	f ≤ F ≤ 15

Current rating 20A

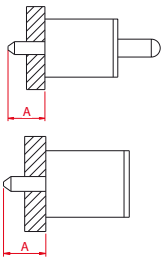
Solder cup



- Hard soldering on wire
- Wire diameter up to 1.83 [.072]
- Current rating 20A

Pin	MH1*
Socket	FH1*

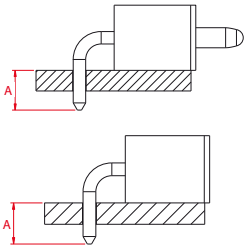
Straight PC tail



- Thru hole soldering
- Mother board
- Termination section: 1.4 [.053]
- PCB thickness: up to 3.2 MAX [.126]
- Current rating 20A

Pin	MH2*
Socket	FH2*

Right angle PC tail



- Thru hole soldering
- Daughter board
- Termination section: 1.2 [.047]
- PCB thickness:1.6 to 2.4 [.063 to .095]
- Current rating 20A

Pin	MH3*
Socket	FH3*

Current rating at 5V (A)	20
Contact resistance (mΩ)	12 MAX
Operating temperature rise (°C)	20 MAX
Contact retention (N)	50 MIN
Insertion and extraction force per contact (N)	f ≤ F ≤ 15

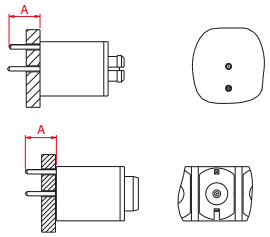
	M121/F121	M141/F141	M132/F132	MH1/FH1	MH2/FH2	MH3/FH3
A MAX	8.2 [.323]	3.8 [.150]	3.8 [.150]	6.3 [.248]	4.2 [.165]	3.8 [.150]
Central contact area plating µm [µin]	2 [.080] Ni + **1.2 [.047] Au**					
Other plating area µm [µin]	2 [.080] Ni + **0.4 [.016] Au**					

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

127 / HE8 >>> SPECIAL CONTACTS (❷)

COAXIAL CONTACTS**

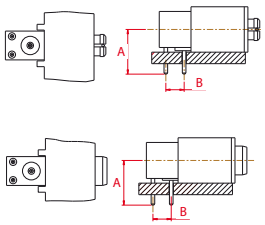
Straight PC tail



- Thru hole soldering
- Mother board
- Termination section: Ø 0.5 [.020]
- PCB thickness: 3.2 $_{MAX}$ [.126]

Pin	**M041***
Socket	**F041***

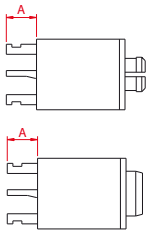
Right angle PC tail



- Thru hole soldering
- Daughter board
- Termination section: Ø 0.5 [.020]
- PCB thickness:1.6 to 2.4 [.063 to .095]

Pin	**M032***
Socket	**F032***

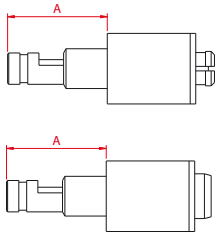
Straight on flexible cable



- Hard-soldering on flexible cable

Pin	**M011***
Socket	**F011***

Straight on flexible cable



- Hard-soldering on flexible cable
- Wire outer diameter up to 2 [.079]

KX 21 A / RG 178 B/U

Pin	**M021***
Socket	**F021***

	COAXIAL CONTACTS
Impedance (Ω)	50
Voltage rating (Vrms)	180
Current rating (mA)	500
Contact retention (N)	50 $_{MIN}$
Frequency range (GHz)	0 to 1
Contact resistance (mΩ)	12 $_{MAX}$
SWR (at 1 GHz)	1.3 $_{MAX}$
Insertion and extraction force per contact (N)	1 ≤ F ≤ 15

OPTICAL TERMINI

Consult us.

	M041/F041	M021/F021	M011/F011	M032/F032
A $_{MAX}$	3.8 [.150]	9.2 [.362]	2.5 [.098]	6.2 [.244]
B $_{MAX}$				2.54 [.100]
Central contact area plating µm [µin]	2 [.080] Ni + **1.2 [.047] Au**			
Other plating area µm [µin]	2 [.080] Ni + **0.4 [.016] Au**			

** Coaxial contacts and power contacts have to be ordered separately against the here above part number. Example: F011*

*** These contacts can be mounted in all types of connectors 127H-127C/HE807.*

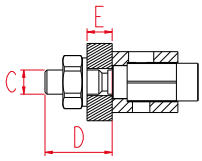
All dimensions are given for information only and are in mm [inch], except as otherwise specified

127 / HE8 >>> FEMALE FITTINGS (❸)

END FITTINGS FOR RECEPTACLES**

Codable & Non lockable fittings

K



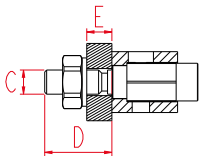
- Chassis or mother board
- Fixed receptacle

Compatibility
- Female contact: 801 / 804 / 807
- Male contact: 807

- Nickel over brass*

	EF	CF
HE 801/ 807	212	229
HE 804	201	202

A



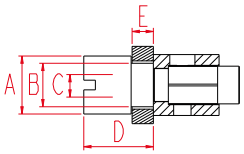
-Chassis or mother board
-Fixed receptacle

Compatibility
- Male contact: 801 / 804

- Nickel over brass*

	EF	CF
HE 801	212	229
HE 804	201	202

P



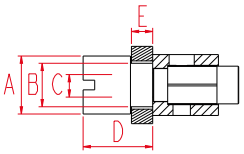
- Chassis
- Floating receptacle

Compatibility
- Female contact: 801 / 804

- Nickel over brass*

	EF	CF
HE 801	203	202
HE 804	203	202

B



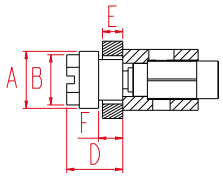
- Chassis
- Floating receptacle

Compatibility
- Male contact: 801 / 804

- Nickel over brass*

	EF	CF
HE 801	203	202
HE 804	203	202

P



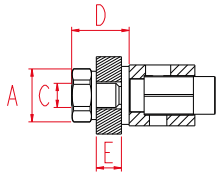
- Chassis
- Floating receptacle

Compatibility
- Female contact: 807
- Male contact: 807

- Nickel over brass *

	EF	CF
HE 807	226	202

L



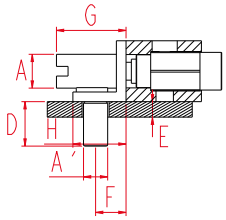
- Chassis or mother board
- With insulating washer

Compatibility
- Female contact: 804

- Nickel over brass *

	EF	CF
HE 804	228	202

KE



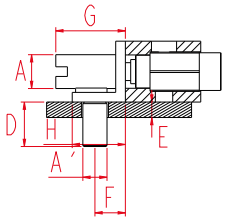
- Daughter board or board to board mating
- Free receptacle - with bracket
- Connection board to board aligned with each other

Compatibility
- Female contact: 801 / 807
- Male contact: 807

- Nickel over brass *

	EF	CF
HE 801	208	209
HE 807	208	208

AE



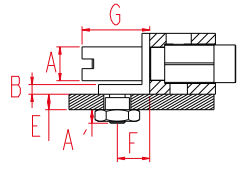
- Daughter board or board to board mating
- Free receptacle - with bracket
- Connection board to board aligned with each other

Compatibility
- Male contact: 801

- Nickel over brass *

	EF	CF
HE 801	208	209

KE



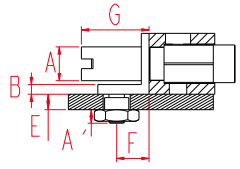
- Daughter board or board to board mating
- Free receptacle - with bracket
- Connection board to board aligned with each other

Compatibility
- Female contact: 804

- Nickel over brass *

	EF	CF
HE 804	209	209

AE



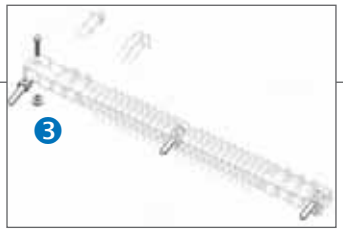
- Daughter board or board to board mating
- Free receptacle - with bracket
- Connection board to board aligned with each other

Compatibility
- Male contact: 804

- Nickel over brass *

	EF	CF
HE 804	209	209

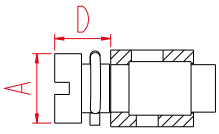
127 / HE8 >>> FEMALE FITTINGS (❸)



END FITTINGS FOR RECEPTACLES**

Non codable & lockable fittings

S



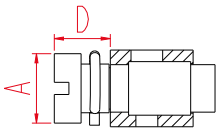
- Cables, free receptacle
- Locking device-extractor - tapped female fitting
- Locking and unlocking shall be carried out simultaneously at both ends

Compatibility
- Female contact: 801 / 804

- Nickel over brass *

	EF	CF
HE 801	219	229
HE 804	220	202

D



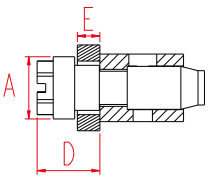
- Cables, free receptacle
- Locking device-extractor - tapped female fitting
- Locking and unlocking shall be carried out simultaneously at both ends

Compatibility
- Male contact: 801/ 804

- Nickel over brass *

	EF	CF
HE 801	219	229
HE 804	220	202

SC



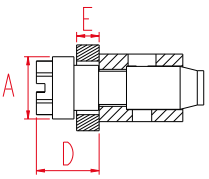
- Cables, free receptacle
- Flex, locking device-extractor

Compatibility
- Female contact: 804

- Nickel over brass *

	EF	CF
HE 804	207	202

DC



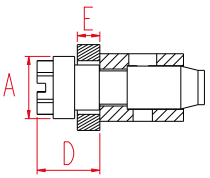
- Cables, free receptacle
- Flex, locking device-extractor

Compatibility
- Male contact: 804

- Nickel over brass *

	EF	CF
HE 804	207	202

SC



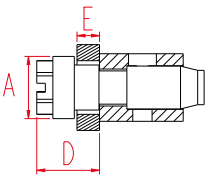
- Chassis, floating receptacle
- Locking device-extractor

Compatibility
- Female contact: 801

- Nickel over brass *

	EF	CF
HE 801	213	229

DC



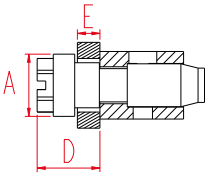
- Chassis, floating receptacle
- Locking device-extractor

Compatibility
- Male contact: 801

- Nickel over brass *

	EF	CF
HE 801	213	229

S



- Chassis, floating receptacle
- Locking device-extractor - tapped female fitting
- Locking and unlocking shall be carried out simultaneously at both ends

Compatibility
- Female contact: 807
- Male contact: 807

- Nickel over brass *

	EF	CF
HE 807	213	229

	S 219 220	D 219 220	SC 207	DC 207	SC 213	DC 213	S 213
A	Ø 5.7 [.224]		Ø 5.8 [.228]				
D	4.7 MAX [.185]		6 MAX [.236]				
E			2.1 MAX [.083]				

	K 212/201	A 212/201	P 203	B 203	P 226	L 228	KE 208	AE 208	KE 209	AE 209
A			Ø 6 [.236]		Ø 6 [.236]	Hex 5 [.197]	Ø 3.5 [.138]		Ø 3.5 [.138]	
A'							M 2.5 [.098]		Hex 4 [.157]	
B			Ø 4.5 [.177]		Hex 4.5 [.177]				1 MAX [.039]	
C	M 2.5 [.098]		M 2.5 [.098]			M 2.5 [.098]				
D	6 MAX [.236]		7.2 [.283]		5.9 [.232]	6 MAX [.236]	4.6 [.181]			
E	3.2 MAX [.126]		2.2 [.087]		2.1 MAX [.083]	2.7 MAX [.106]	1.6 to 2.4 [.063 to .094]			
F					2.3 [.091]		2.35 [.093]		3.35 [.132]	
G							7.2 MAX [.283]		7.2 MAX [.283]	
H							5.5 [.217]			

*To order the same fitting in passivated stainless steel, change the "2" in the HE8 reference to a "4" (2xx => 4xx)
** To order the fitting alone: HE8C + xxx

EF: End Fitting / **CF:** Central Fitting

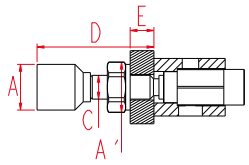
All dimensions are given for information only and are in mm [inch], except as otherwise specified

127 / HE8 >>> FEMALE FITTINGS (❸)

END FITTINGS FOR RECEPTACLES**

Codable & lockable fittings

KD



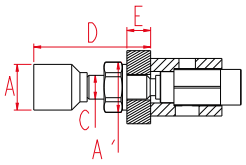
- Chassis or mother board
- Fixed receptacle
- Locking ensuring resistance to vibrations

Compatibility
- Female contact: 801 / 804 / 807
- Male contact: 807

- Nickel over brass*

	EF	CF
HE 801 / 807	221	229
HE 804	221	202

AD



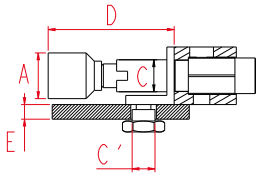
- Chassis or mother board
- Fixed receptacle
- Locking ensuring resistance to vibrations

Compatibility
- Male contact: 801 / 804

- Nickel over brass*

	EF	CF
HE 801 / 804	221	229
HE 804	221	202

KED



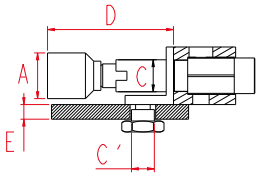
- Daughter board
- Free receptacle - with bracket
- Connection board to board aligned with each other
- Locking ensuring resistance to vibrations

Compatibility
- Female contact: 804

- Nickel over brass*

	EF	CF
HE 804	223	209

AED



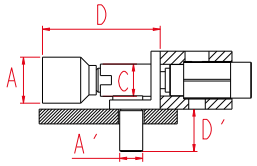
- Daughter board
- Free receptacle - with bracket
- Connection board to board aligned with each other
- Locking ensuring resistance to vibrations

Compatibility
- Male contact: 804

- Nickel over brass*

	EF	CF
HE 804	223	209

KED



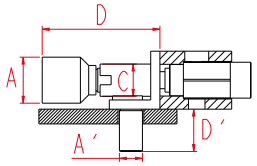
- Daughter board
- Free receptacle - with bracket
- Connection board to board aligned with each other
- Locking ensuring resistance to vibrations

Compatibility
- Female contact: 801 / 807
- Male contact: 807

- Nickel over brass *

	EF	CF
HE 801	224	209
HE 807	224	208

AED



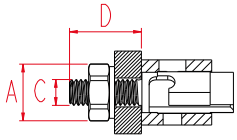
- Daughter board
- Free receptacle - with bracket
- Connection board to board aligned with each other- Locking ensuring resistance to vibrations

Compatibility
- Male contact: 801

- Nickel over brass *

	EF	CF
HE 801	224	209

KT



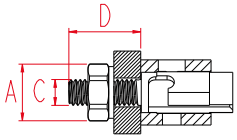
- Chassis or mother board
- Fixed receptacle
- Quarter turn locking on plug side

Compatibility
- Female contact: 801 / 804/ 807
- Male contact: 807

- Passivated stainless steel only*

	EF	CF
HE 801/ 807	422	429
HE 804	422	402

AT



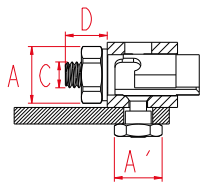
- Chassis or mother board
- Fixed receptacle
- Quarter turn locking on plug side

Compatibility
- Male contact: 801/ 804

- Passivated stainless steel only

	EF	CF
HE 801	422	429
HE 804	422	402

KET



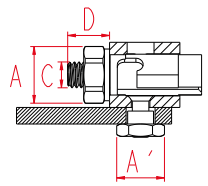
- Daughter board or board to board mating
- Free receptacle
- Quarter turn locking on plug side

Compatibility
- Female contact: 801/ 804/ 807
- Male contact: 807

- Passivated stainless steel only

	EF	CF
HE 801/804/807	425	425

AET



- Daughter board or board to board mating
- Free receptacle
- Quarter turn locking on plug side

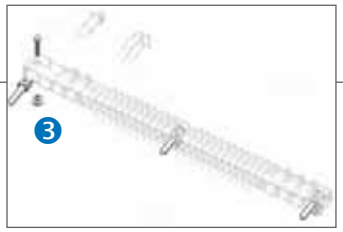
Compatibility
- Male contact: 801/ 804

- Passivated stainless steel only

	EF	CF
HE 801/804	425	425

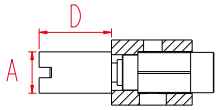
All dimensions are given for information only and are in mm [inch], except as otherwise specified

127 / HE8 >>> FEMALE FITTINGS (❸)



CENTRAL FITTINGS FOR RECEPTACLES**

229

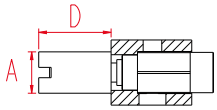


Compatibility
- Female contact: 801 / 807
- Male contact: 801/ 807
- **EF:** K / A / P / B / S / D / SC / DC / KD / AD

- Nickel over brass *

HE 801/807	229

202

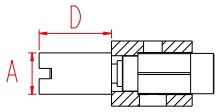


Compatibility
- Female contact: 804
- Male contact: 804
- **EF:** K / A / P / B / L / S / D / SC / DC / KD / AD

- Nickel over brass *

HE 804	202

429

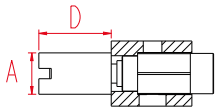


Compatibility
- Female contact: 801 / 807
- Male contact: 801 / 807
- **EF:** KT / AT

- Passivated stainless steel *

HE 801 / 807	429

402

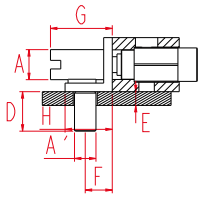


Compatibility
- Female contact: 804
- Male contact: 804
- **EF:** KT / AT

- Passivated stainless steel *

HE 804	402

208

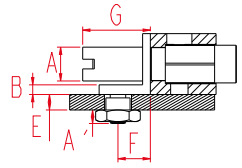


Compatibility
- Female contact: 801 / 807
- Male contact: 801 / 807
- **EF:** KE / AE / KED / AED

- Nickel over brass *

HE 801 / 807	208

209

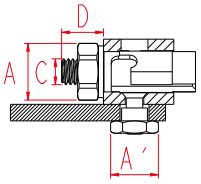


Compatibility
- Female contact: 804
- Male contact: 804
- **EF:** KE / AE / KED / AED

- Nickel over brass *

HE 804	209

425



Compatibility
- Female contact: 801 / 804 / 807
- Male contact: 801 / 804 / 807
- **EF:** KET / AET

- Passivated stainless steel *

	EF	CF
HE 801/ 804 / 807	224	208

	202 / 229 / 429 / 402	208	209	425
A	Ø 4 [.157]	Ø 3.5 [.138]		Hex 5 [.197]
B			1 MAX [.039]	
D	7 MAX [.276]	4.6 [.181]		4.1 MAX [.161]
E		1.6 to 2.4 [.063 to .094]		
F		2.35 [.093]	3.35 [.132]	
G		7.2 MAX [.283]		
H		5.5 [.217]		
A'		M 2.5 [.098]	Hex 4 [.157]	Hex 4 [.157]
C				M 2.5 [.098]

	KD / AD 221		KED / AED 223	KED / AED 224	KT / AT 422	KET / AET 425
A	Ø 5 [.197]		Ø 5 [.197]		Hex 5 [.197]	
C	M 2.5 [.098]		Ø 3.5 [.138]	Ø 3.5 [.138]	M 2.5 [.098]	
D	X HE804 = 18 MAX [.709] Y HE804 = 26.1 MAX [1.028] Z HE804 = 14 MAX [.551]	X HE801/807 = 17 MAX [.669] Y HE801/807 = 25.1 MAX [.988] Z HE801/807 = 13 MAX [.512]	Z = 14 MAX [.551]	Z = 13 MAX [.512]	HE804: 7 MAX [.276] HE801 / 807: 6 MAX [.236]	4.1 MAX [.161]
D'				4.6 [.181]		
E	3.2 MAX [.126]		1.6 to 2.4 [.063 to .094]			
A'	Hex 5 [.197]			M 2.5 [.098]		Hex 4 [.157]
C'			Ø1.6 [0.63]			

** To order the fitting alone: HE8C + xxx
*To order the same fitting in passivated stainless steel, change the "2" in the HE8 reference to a "4" (2xx => 4xx)
*To order the same fitting in nickel over brass, change the "4" in the HE8 reference to a "2" (4xx => 2xx)
x: unlocked - y: screw out - z: locked

EF: End Fitting / **CF:** Central Fitting

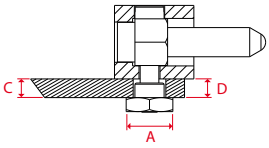
All dimensions are given for information only and are in mm [inch], except as otherwise specified

127 / HE8 >>> MALE FITTINGS (❸)

END FITTINGS FOR PLUGS**

Non codable & Non lockable fittings

PA



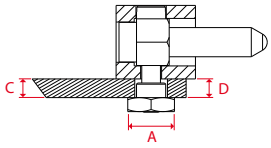
- Daughter board or extension board single or double sided
- Free plug - with plated thru holes

Compatibility
- Female contact: 801 / 804 / 807
- Male contact: 807

- Nickel over brass *

	EF	CF
HE 801/ 804/ 807	102	102

PC



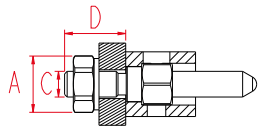
- Daughter board or extension board single or double sided
- Free plug - with plated thru holes

Compatibility
- Male contact: 801 / 804

- Nickel over brass *

	EF	CF
HE 801 /804	102	102

T



- Chassis or mother board
- Board to board, board to chassis, parallel to one another

Compatibility
- Female contact: 801/ 804/ 807
- Male contact: 801/ 804 / 807

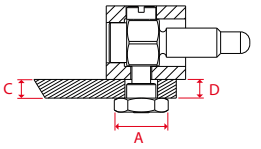
- Nickel over brass *

	EF	CF
HE 801/807	118	129
HE 804	111	113

	PA / PC	T
A	Hex 4 [.157]	Hex 5 [.197]
C	1.6 to 2.4 [.063 to .094]	M 2.5 [.098]
D	1.3 $_{MAX}$ [.051]	6 $_{MAX}$ [.236]

Non codable & Non locking fittings

D



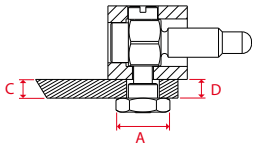
- Daughter board single or double sided
- Free plug - with plated thru holes
- Lockable on receptacle side

Compatibility
- Female contact: 801/ 804 / 807
- Male contact: 807

- Nickel over brass *

	EF	CF
HE 801/804/807	103	102

S



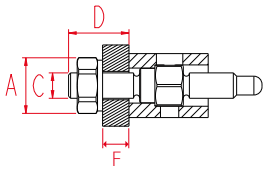
- Daughter board single or double sided
- Free plug - with plated thru holes
- Lockable on receptacle side

Compatibility
- Male contact: 801/ 804

- Nickel over brass *

	EF	CF
HE 801/ 804	103	102

EF



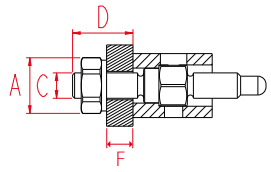
- Chassis or mother board
- Board to board, board to chassis, parallel to one another, board to cable or chassis to cable
- Lockable on receptacle side

Compatibility
- Female contact: 801 / 804 / 807
- Male contact: 807

- Nickel over brass *

	EF	CF
HE 801/ 807	119	129
HE 804	112	113

RF



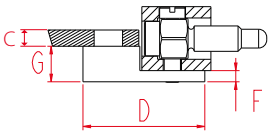
- Chassis or mother board
- Free plug - with plated thru holes
- Lockable on receptacle side

Compatibility
- Male contact: 801 / 804

- Nickel over brass *

	EF	CF
HE 801	119	129
HE 804	112	113

NF



- SMT daughter board aligned with connector centerline
- Lockable on receptacle side

Compatibility
- Female contact: 801 / 804
- Male contact: 801 / 804

- Nickel over brass *

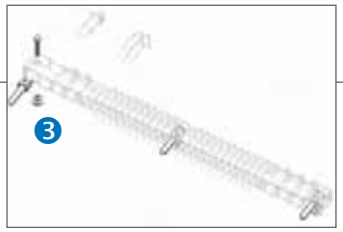
	EF	CF
HE 801	116	114
HE 804	108	104

	D / S	EF	RF	NF
A	Hex 4 [.157]	Hex 5 [.197]		
C	1.6 to 2.4 [.063 to .094]	M 2.5 [.197]		1.6 [.063]
D	1.3 $_{MAX}$ [.051]	6 $_{MAX}$ [.236]		HE801 13.9 $_{MAX}$ [.547] HE804 12.2 $_{MAX}$ [.480]
F		3.2 $_{MAX}$ [.126]		1.1 [.043]
G				3.5 [.138]

EF: End Fitting / **CF:** Central Fitting

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

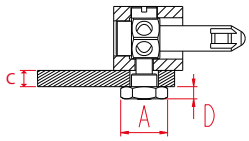
127 / HE8 >>> MALE FITTINGS (❸)



END FITTINGS FOR PLUGS**

Codable & Non lockable fittings

A



- Daughter board single or double sided
- Free plug - with plated thru holes

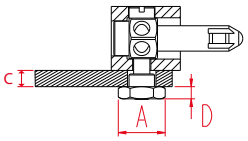
Compatibility

- Female contact: 801 / 804 / 807
- Male contact: 807

- Nickel over brass *

	EF	CF
HE 801/ 804/ 807	**101**	**102**

J



- Daughter board single or double sided
- Free plug - with plated thru holes

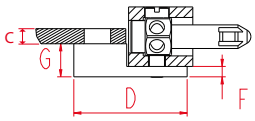
Compatibility

- Male contact: 801 / 804

Nickel over brass *

	EF	CF
HE 801 /804	**101**	**102**

N



- SMT daughter board aligned with connector centreline
- Free plug - with plated thru holes

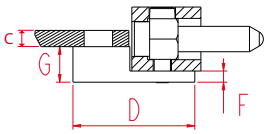
Compatibility

- Female contact: 801 / 804
- Male contact: 801 / 804

- Nickel over brass *

	EF	CF
HE 801	**115**	**114**
HE 804	**106**	**104**

V



- SMT daughter board aligned with connector centreline
- Free plug - with plated thru holes

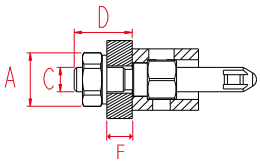
Compatibility

- Female contact:: 801 / 804
- Male contact: 801 / 804

- Nickel over brass *

	EF	CF
HE 801	**114**	**114**
HE 804	**104**	**104**

E



- Chassis or mother board
- Board to board, board to chassis

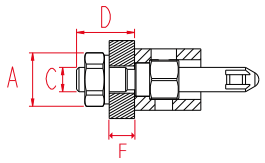
Compatibility

- Female contact: 801/ 804 / 807
- Male contact: 807

- Nickel over brass *

	EF	CF
HE 801 /807	**117**	**129**
HE 804	**110**	**113**

R



- Chassis or mother board (board to board, board to chassis)

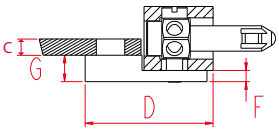
Compatibility

- Male contact: 801 / 804

- Nickel over brass *

	EF	CF
HE 801	**117**	**129**
HE 804	**110**	**113**

H



- SMT daughter board
- Offset from connector centreline
- Free plug - with plated thru holes

Compatibility

- Female contact: 804

- Nickel over brass *

	EF	CF
HE 804	**107**	**105**

	A	J	N	V	E	R	H
A	Hex 4 [.157]				Hex 5 [.197]		
C	1.6 to 2.4 [0.63 to 0.94]		1.6 [0.63]		M 2.5 [.098]		1.6 [0.63]
D	1.3 $_{MAX}$ [.051]		HE801 13.9 $_{MAX}$ [.547] HE804 12.2 $_{MAX}$ [.480]		6 $_{MAX}$ [.236]		13.05 $_{MAX}$ [.514]
F			1.1 [.043]		3.2 $_{MAX}$ [.126]		1.1 [.043]
G			3.5 [.138]				2.7 [.106]

*To order the same fitting in passivated stainless steel, change the "1" in the HE8 reference to a "3" (1xx => 3xx)

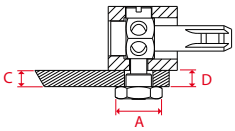
** To order the fitting alone: HE8C + xxx

127 / HE8 >>> MALE FITTINGS (❸)

END FITTINGS FOR PLUGS**

Codable & lockable fittings

AS



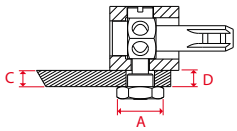
- Daughter board single or double sided
- Free plug - with plated thru holes
- Lockable on receptacle side

Compatibility

- Female contact: 801 / 804 / 807
- Male contact: 807
- Nickel over brass *

	EF	CF
HE 801/ 804/ 807	124	102

JS



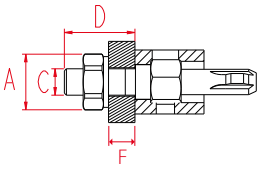
- Daughter board single or double sided
- Free plug - with plated thru holes
- Lockable on receptacle side

Compatibility

- Male contact: 801 / 804
- Nickel over brass *

	EF	CF
HE 801 /804	124	102

ES



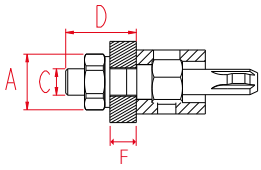
- Chassis or mother board
- Board to board, board to chassis, parallel to one another, board to cable or chassis to cable
- Lockable on receptacle side

Compatibility

- Female contact: 801/ 804 / 807
- Male contact: 807
- Nickel over brass *

	EF	CF
HE 801	125	129
HE 804	125	113

RS



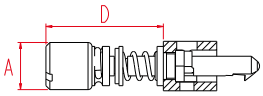
- Chassis or mother board
- Board to board, board to chassis, parallel to one another, board to cable or chassis to cable
- Lockable on receptacle side

Compatibility

- Male contact: 801 / 804
- Nickel over brass *

	EF	CF
HE 801	125	129
HE 804	125	113

ET



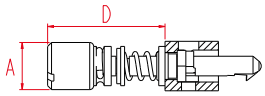
- Cable to board or cable to chassis
- Quarter turn locking
- Dimensions given in reset position

Compatibility

- Female contact: 801/ 804 / 807
- Male contact: 807
- Passivated stainless steel only

	EF	CF
HE 801/807	327	329
HE 804	327	313

RT



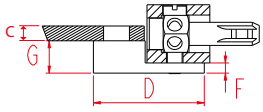
- Cable to board or cable to chassis
- Quarter turn locking
- Dimensions given in reset position

Compatibility

- Male contact: 801/ 804
- Passivated stainless steel only

	EF	CF
HE 801	327	329
HE 804	327	313

NS



- SMT daughter board aligned with fitting centerline
- Lockable on receptacle side

Compatibility

- Female contact: 801 / 804
- Male contact: 801 / 804
- Nickel over brass *

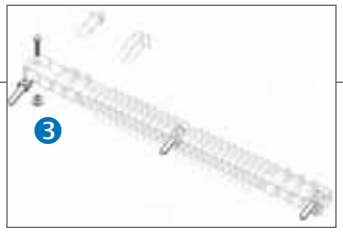
	EF	CF
HE 801	114	114
HE 804	126	104

	AS	JS	ES	RS	ET	RT	NS
A	Hex 4 [.157]		Hex 5 [.197]		Ø 6 [.236]		
C	1.6 to 2.4 [.063 to .094]		M 2.5 [.098]				1.6 [.063]
D	1.3 $_{MAX}$ [.051]		7 $_{MAX}$ [.276]		16 $_{MAX}$ [.630]		HE801 13.9 $_{MAX}$ [.547] HE804 12.2 $_{MAX}$ [.480]
F			3.2 $_{MAX\ [.126]}$				1.1 [.043]
G							3.5 [.138]

EF: End Fitting / **CF:** Central Fitting

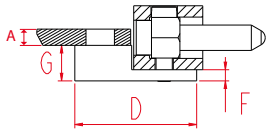
All dimensions are given for information only and are in mm [inch], except as otherwise specified

127 / HE8 >>> MALE FITTINGS (❸)



CENTRAL FITTINGS FOR PLUGS**

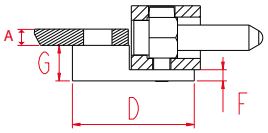
114



Compatibility
- Female contact: 801
- Male contact: 801
- N / V / NF / NS
- Nickel over brass *

HE 801 **114**

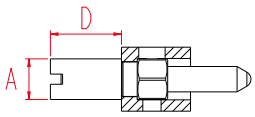
104



Compatibility
- Female contact: 804
- Male contact: 804
- N / V / NF / NS
- Nickel over brass *

HE 804 **104**

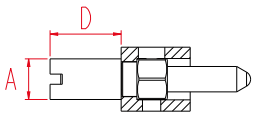
129



Compatibility
- Female contact: 801 / 807
- Male contact: 801 / 807
- E / R / T / EF / RF / ES / RS
- Nickel over brass *

HE 801/807 **129**

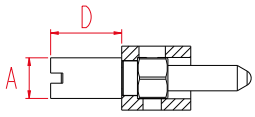
113



Compatibility
- Female contact: 804
- Male contact: 804
- E / R / T / EF / RF / ES / RS
- Nickel over brass *

HE 804 **113**

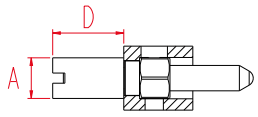
329



Compatibility
- Female contact: 801/ 807
- Male contact: 801/ 807
- ER / RT
-Passivates stainless steel *

HE 801/ 807 **329**

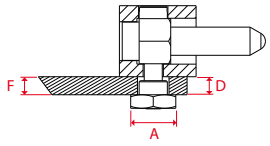
313



Compatibility
- Female contact: 804
- Male contact: 804
- ER / RT
- Passivated stainless steel *

HE 804 **313**

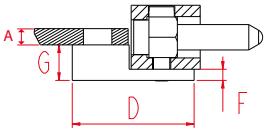
102



Compatibility
- Female contact: 801 / 804 / 807
- Male contact: 801 / 804 / 807
- A / J / PA / PC / D / S / AS / JS
- Nickel over brass *

HE 801/ 804/ 807 **102**

105



Compatibility
- Female contact: 804
- H
- Nickel over brass *

HE 804 **105**

	114	104	129	113	329	313	102	105
A	1.6 [.063]		Ø 4 [.157]				Hex 4 [.157]	1.1 [.043]
D	13.9 MAX [.547]	12.2 MAX [.480]	7 MAX [.276]				1.3 MAX [.051]	12.2 MAX [.480]
F	1.1 [.043]						1.6 to 2.4 [.063 to .094]	1.6 [.063]
G	3.5 [.514]							2.7 [.106]

** To order the fitting alone: HE8C + xxx
*To order the same fitting in passivated stainless steel, change the "1" in the HE8 reference to a "3" (1xx => 3xx)
*To order the same fitting in nickel over brass, change the "3" in the HE8 reference to a "1" (3xx => 1xx)

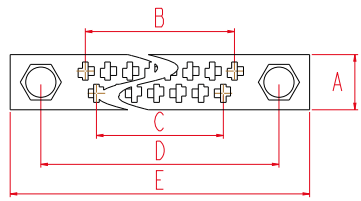
All dimensions are given for information only and are in mm [inch], except as otherwise specified

127 / HE8 >>> HE 801 & HE 804

TYPICAL ARRANGEMENTS

n indicates the total number of signal contacts

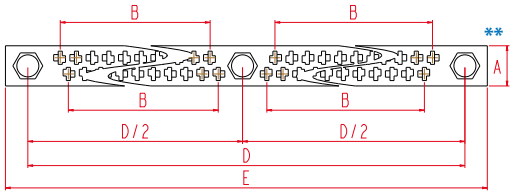
Signal contacts on 2 rows without central fitting*



n = 17, 29, 33, 41, 53 or 65

A	6.3 $^{+0.1}$
B	(n-1) X 1.27
C	B - 2.54
D	B + 10.16
E	≈ D + 7

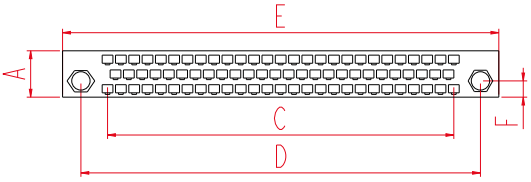
Signal contacts on 2 rows with central fittings *



n = 72, 84, or 96

A	6.3 $^{+0.1}$
B	(n-4) X 0.635
D	2 X (B +10.16)
E	≈ D + 7

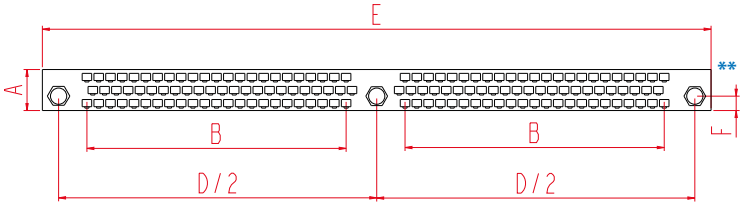
Signal contacts on 3 rows without central fittings *



n = 80

A	8.94 (female connector) or 8.55 (female connector)
C	66.04
D	76.3 $_{MAX}$
E	83.4 $_{MAX}$
F	3.1

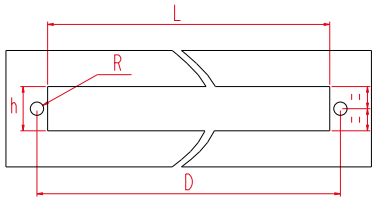
Signal contacts on 3 rows with central fittings *



n = 144

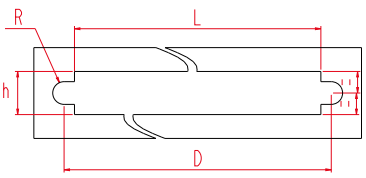
A	8.4 $_{MAX}$
B	58.42
D	137.16
E	144.36 $_{MAX}$
F	3.1

Panel drilling*



- Receptacle with A-AD-AT fittings or plug with R-RF-RS-T fittings with male contact W3-ZC-X
- Receptacle with K-KD-KT-L fittings or plug with E-EF-ES-T fittings with female contact W3-Z

D	See above
L	≈ D - 4.6
h	9.5 $_{MIN}$
R	Ø 2.85 $_{MIN}$ ⌖ Ø 0.2



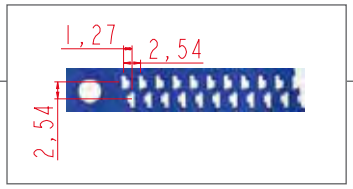
- Receptacle with B fitting and male contact W3-ZC-X
- Receptacle with P fitting and female contact W3-Z

D	See above
L	≈ D - 4.6
h	9.5 $_{MIN}$
R	Ø 5 ± 0.1 ⌖ Ø 0.2

** in mm: 1mm = 0.03937 inch*

*** The standard version presents a stiffening bar with W3-ZC-Z contacts and no stiffening bar with YC-V-Y-YD-X contacts. Put an A in the part number code to have no stiffening bar on the connector with W3-ZC-Zcontacts or a B to have a stiffening bar on the connector with YC-U-Y-YD-X contacts.*

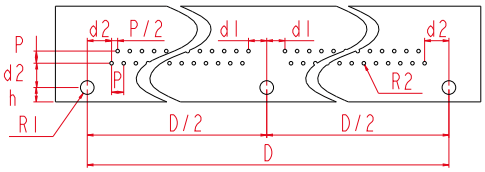
127 / HE8 >>> HE 801 & HE 804



LAYOUTS

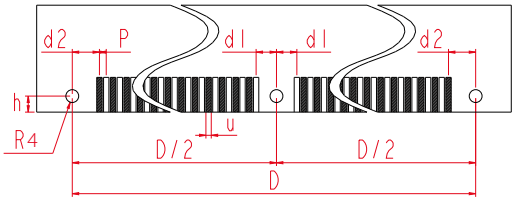
The boards are shown from the connector side.
The drawings show various footprints for connectors with a central attachment on board.
For smaller connectors (17, 29, 33, 41, 53 and 65 contacts), omit the center drilling.
All contacts outputs are equidistant. For daughterboard, the first contact's marking is indicated for reference only.

Daughterboard drilling for YC contact*



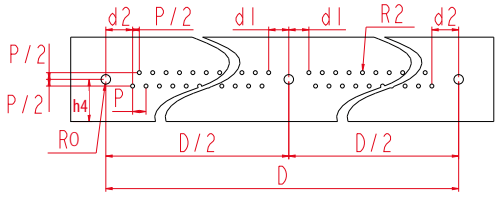
- Receptacle with KET-AET fittings or plug with A-D-AS-PA-J-S-JS-PC fittings
- YC (male and female contact)

Daughterboard drilling for U contact*



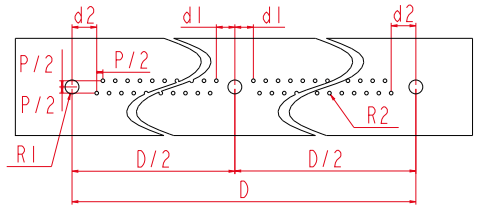
- Plug with H-N-NF-NS-V fittings
- U (male and female contact)

Daughterboard drilling for YC contact*



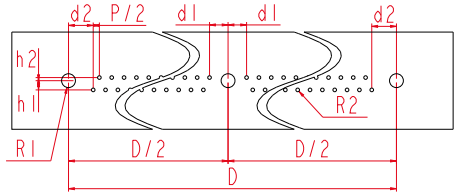
- Receptacle with KE-KED-AE-AED fittings
- YC (male and female contact)

Motherboard drilling for Y contact (male and female)*



- Receptacle with A-AD-AT fittings or plug with R-RF-RS-T fittings
- Y (male and female contact)

Motherboard drilling for YD contacts (socket only)*



- Receptacle with K-L-KD-KT fittings or plug with E-EF-ES-T fittings
- YD (female contact only)

D	d_1	d_2	p	$p_{/2}$	h	h_1	h_2	h_4	R_0	R_1	R_2	R_4	u
See above	3.81 [.150]	5.08 [.200]	2.54 [.100]	1.27 [.050]	3 MAX [.118]	1.9 [.075]	0.64 [.025]	8 MAX [.315]	Ø 1.8 MIN [.071]	Ø 2.85 MIN [.112] ⌖ Ø 0.2	Ø 0.75 MIN [.030] ⌖ Ø 0.2	Ø 2.4 MIN [.094]	1.6 ± 0.1 [.063 ± .004]

** in mm: 1mm = 0.03937 inch*

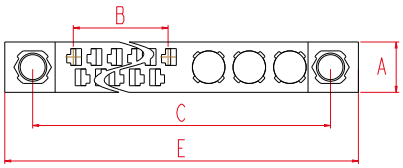
All dimensions are given for information only and are in mm [inch], except as otherwise specified

127 / HE8 >>> HE 807

TYPICAL ARRANGEMENTS

n indicates the total number of signal contacts
h indicates the total number of hybrid contacts

n signal contacts + 3 cavities without central fittings*



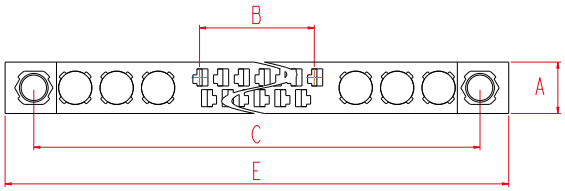
Note:

- *Asymmetrical arrangements with female contacts always have plug marking*
- *Asymmetrical arrangements with male contacts always have receptacle marking*

- n = 5, 17, 29, 41 or 53
- h = 3

B	(n - 1) X 1.27
D	(n + 12) x 1.27 + 8.89
E	D + 7

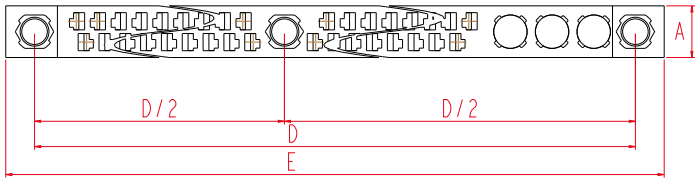
n signal contacts + 6 cavities without central fittings*



- n = 5, 17, 29 or 41
- h = 6

B	(n - 1) X 1.27
D	(n + 24) x 1.27 + 8.89
E	D + 7

n signal contacts + 3 cavities with central fittings*



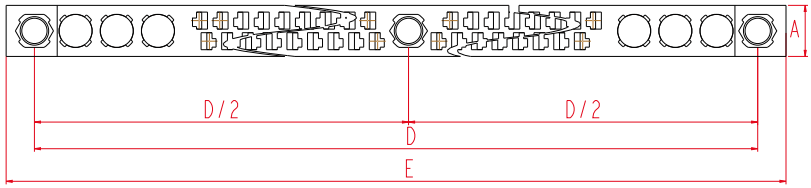
Note:

- *Asymmetrical arrangements with female contacts always have plug marking*
- *Asymmetrical arrangements with male contacts always have receptacle marking*

- n = 60, 72 or 84
- h = 3

A	$6.3^{+0.1}$
D	(n+8) x 1.27 + 20.32
E	D + 7

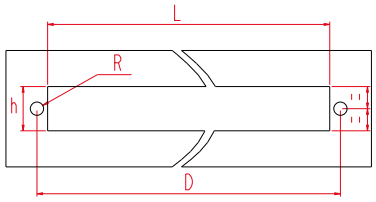
n signal contacts + 6 cavities with central fittings*



- n = 48, 60, 72
- h = 6

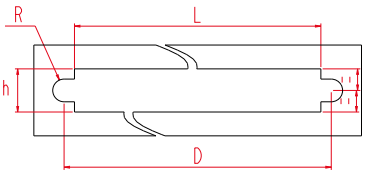
A	$6.3^{+0.1}$
D	(n+20) x 1.27 + 20.32
E	D + 7

Panel drilling*



- Receptacle with K-KD-KT fittings or plug with E-EF-ES fittings and male contacts W3-ZC-X and special contacts
- Receptacle with K-KD-KT fittings or plug with E-EF-ES fittings and female contacts W3-ZC-X1 and special contacts
- F011 / M011 F021 / M021
  F121 / M121 FH1 / MH1

D	See above
L	D - 4.6
h	9.5 MIN
R	Ø 2.85 MIN ⌖ Ø 0.2



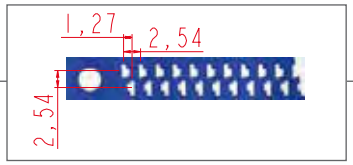
- Receptacle with P fitting with male contacts W3-ZC-X and special contacts
- Receptacle with P fitting with female contact W3-ZC-X1 and special contacts
- F011 / M011 F021 / M021
  F121 / M121 FH1 / MH1

D	See above
L	D - 4.6
h	9.5 MIN
R	Ø 5 ± 0.1 ⌖ Ø 0.2

** in mm: 1mm = 0.03937 inch*

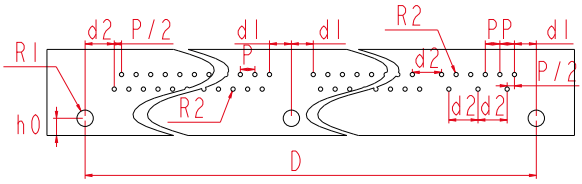
All dimensions are given for information only and are in mm [inch], except as otherwise specified

127 / HE8 >>> HE 807



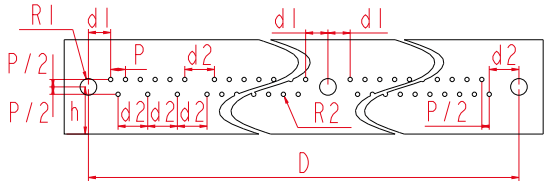
LAYOUTS COAXIAL CONTACTS

Daughterboard drilling YC + F032/M032 contacts*



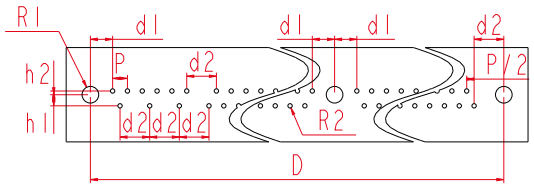
- Receptacle with KET fittings or plug A-D-AS-PA
- YC & coaxial F032/M032 contacts (male & female)

Daughterboard drilling YC + F032/M032 contacts*



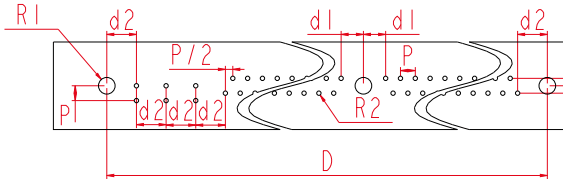
- Receptacle KE
- YC & coaxial F032/M032 contacts (male & female)

Daughterboard drilling YC + F032/M032 contacts*



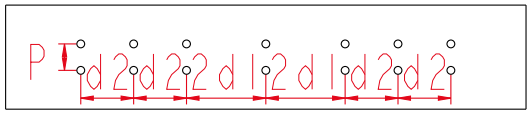
- Receptacle IE
- YC & coaxial F032/M032 contacts (male & female)

Motherboard drilling Y + F041/M041 contacts*

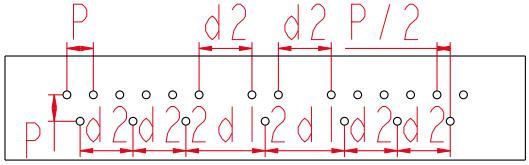


- Receptacle with K-KD-KT fittings and plug E-EF-ES-T fittings.
- Y & coaxial F041 / M041 contacts (male & female contacts)

Contact F041/M041



Contact F032/M032



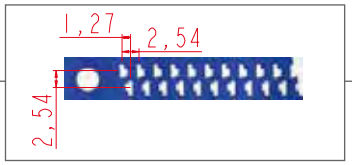
D	d_1	d_2	p	$p_{/2}$	h_0	h_1	h_2	R_1	R_2	h
See above	3.81 [.150]	5.08 [.200]	2.54 [.100]	1.27 [.050]	3 MAX [.118]	1.9 [.075]	0.64 [.025]	Ø 2.85 MIN Ø0.2 [.112]	Ø 0.75 MIN Ø0.2 [.030]	9.35 [.368]

** in mm: 1mm = 0.03937 inch*

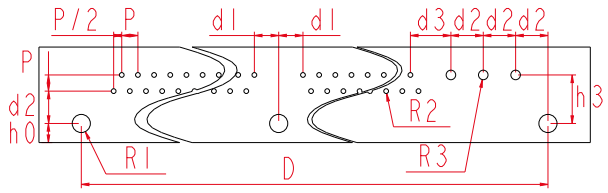
All dimensions are given for information only and are in mm [inch], except as otherwise specified

127 / HE8 >>> HE 807

LAYOUTS. POWER CONTACTS.

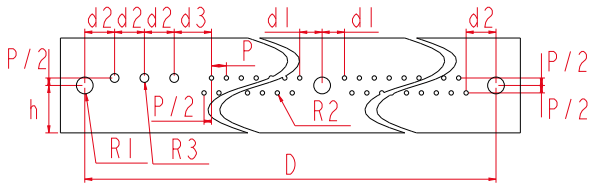


Daughterboard drilling YC + FH3/MH3 & F132/M132



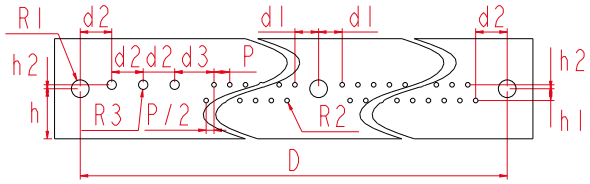
- Receptacle with KET fitting & plug with A-D-AS-PA fittings
- YC & power FH3 / MH3 & F132 / M132 contacts (male & female)

Daughterboard drilling YC + FH3/MH3 & F132/M132



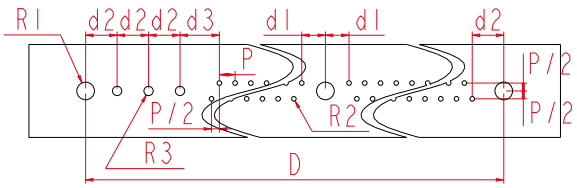
- Receptacle with KE fitting
- YC & power FH3 / MH3 & F132 / M132 contacts (male & female)

Daughterboard drilling YC + FH3/MH3 & F132/M132



- Receptacle with IE fitting
- YC & power FH3 / MH3 & F132 / M132 contacts (male & female)

Daughterboard drilling Y + FH2/MH2 & F141/M141



- Receptacle with K-KD-KT fitting with Y & power FH2 / MH2 & F141 / M141 contacts (male & female)
- Plug with E-EF-ES-T fittings with Y & power FH2 / MH2 & F141 / M141 contacts (male & female)

D	d_1	d_2	d_3	p	$p_{/2}$	h_0	h_1	h_2	h_3	R_1	R_2	R_3	h
See above	3.81 [.150]	5.08 [.200]	6.35 [.250]	2.54 [.100]	1.27 [.050]	3 MAX [.118]	1.9 [.075]	0.64 [.025]	7.62 [.300]	Ø 2.85 MIN Ø 0.2 [.112]	Ø 0.75 MIN Ø 0.2 [.030]	Ø 1.5 MIN Ø 0.2 [.059]	9.35 [.368]

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

127 / HE8 >>> TOOLING

REMOVAL TOOLS

1272

- Pin: ZC / X / YC / YL
- Rear release

Part number	1272

24098

- Pin Y / W3 / U
- Front release

Part number	24098

1271

- Socket: YC / U / Z (HE 801 & HE 804)
- Rear release

Part number	1271

24099

- Socket: YC / U / Z (HE 807)
- Rear release

Part number	24099

20973

- Socket: W3
- Rear release

Part number	20973

20143

- Socket: Y / YD
- Front release

Part number	20143

23550

- Socket: particular contacts HE 807
- Rear release

Part number	23550

CRIMPING TOOLS

HE 8 20 051

- Pin: X
- AWG 26 to 22
- No additional turret

Part number	HE 8 20 051

809801

- Socket: X1
- AWG 26 to 22
- Additional turret: 127.800.030
- Military reference: M22520/2-01

Part number	809801

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

127 / HE8 >>> FITTINGS & CONTACT COMPATIBILITIES

HE801

COMPATIBLE MALE FITTINGS Connector with male contacts	YD	X1	Z	W3	Y	U	T	YL	YC	FEMALE FITTING RECEPTACLE	YC	YL	U	Y	W3	ZC	X	COMPATIBLE MALE FITTINGS Connector with female contacts
										AET	X	X						
RT							X	X	X	KET								ET
										AT				X	X	X	X	
		X	X	X	X					KT								
										AED	X	X						
JS																		AS
NS							X	X	X	KED								NS
RS										AD				X	X	X	X	ES
		X	X	X	X					KD								
										DC				X	X	X	X	
S																		D
NF		X	X	X	X					SC								NF
RF										D				X	X	X	X	EF
		X	X	X	X					S								
										L								
J																		A
PC										AE	X	X	X					PA
N							X	X	X	KE								N
V										B				X	X	X	X	V
R	X	X	X	X	X					P								E
T										A				X	X	X	X	T
	X	X	X	X	X					K								
FEMALE CONTACTS	YD	X1	Z	W3	Y	U	T	YL	YC		YC	YL	U	Y	W3	ZC	X	MALE CONTACTS
							X	X	X	A								
										J	X	X						
							X	X	X	PA								
										PC	X	X						
A										H								K
B						X				N			X					P
AE						X				V			X					KE
	X	X	X	X	X					E								
										R				X	X	X	X	
	X	X	X	X	X					T				X	X	X	X	
							X	X	X	D								
										S	X	X						
D						X				NF			X					S
DC	X	X	X	X	X					EF								SC
										RF				X	X	X	X	
							X	X	X	AS								
										JS	X	X						
AD						X				NS			X					KD
AED	X	X	X	X	X					ES								KED
										RS				X	X	X	X	
AT		X	X	X						ET								KT
AET										RT					X	X	X	KET
COMPATIBLE FEMALE FITTINGS Connector with male contacts										MALE FITTING PLUG								COMPATIBLE FEMALE FITTINGS Connector with female contacts

127 / HE8 >>> FITTINGS & CONTACT COMPATIBILITIES

HE804

COMPATIBLE MALE FITTINGS Connector with male contacts	YD	X1	Z	W3	Y	U	T	YL	YC	FEMALE FITTING RECEPTACLE	YC	YL	U	Y	W3	ZC	X	COMPATIBLE MALE FITTINGS Connector with female contacts
										AET	X	X						
							X	X	X	KET								
RT										AT				X	X	X	X	ET
		X	X	X	X					KT								
										AED	X	X						
JS							X	X	X	KED								AS
NS										AD				X	X	X	X	NS
RS		X	X		X					KD								ES
										DC				X	X	X	X	
S		X	X	X	X					SC								D
NF										D				X	X	X	X	NF
RF		X	X	X	X					S								EF
J	X	X	X	X	X					L								A
PC										AE	X	X						PA
N							X	X	X	KE								N
V										B				X	X	X	X	V
R	X	X	X	X	X					P								E
T										A				X	X	X	X	T
	X	X	X	X	X					K								
FEMALE CONTACTS	YD	X1	Z	W3	Y	U	T	YL	YC		YC	YL	U	Y	W3	ZC	X	MALE CONTACTS
							X	X	X	A								
										J	X	X						
							X	X	X	PA								
										PC	X	X						
A						X				H								K
B						X				N			X					P
AE						X				V			X					KE
	X	X	X	X	X					E								
										R				X	X	X	X	
	X	X	X	X	X					T				X	X	X	X	
							X	X	X	D								
										S	X	X						
D						X				NF			X					S
DC	X	X	X	X	X					EF								SC
										RF				X	X	X	X	
							X	X	X	AS								
										JS	X	X						
AD						X				NS			X					KD
AED	X	X	X	X	X					ES								KED
										RS				X	X	X	X	
AT		X	X	X						ET								KT
AET										RT					X	X	X	KET

COMPATIBLE FEMALE FITTINGS

Connector with male contacts

MALE FITTING PLUG

COMPATIBLE FEMALE FITTINGS

Connector with female contacts

127 / HE8 >>> FITTINGS & CONTACT COMPATIBILITIES

HE807

COMPATIBLE MALE FITTINGS Connector with male contacts										FEMALE FITTING RECEPTACLE								COMPATIBLE MALE FITTINGS Connector with female contacts
										AET								
ET							X	X	X	KETX	X	X						ET
										AT								
		X	X	X	X					KT				X	X	X	X	
										AED								
AS ES							X	X	X	KED	X	X						AS ES
										AD								
		X	X	X	X					KD				X	X	X	X	
										DC								
D EF										SC								D EF
										D								
		X	X	X	X					S				X	X	X	X	
										L								
										AE								
A PA E T							X	X	X	KE	X	X	X					A PA E T
										B								
	X	X	X	X	X					P				X	X	X	X	
										A								
	X	X	X	X	X					K				X	X	X	X	
FEMALE CONTACTS	YD	X1	Z	W3	Y	U	T	YL	YC		YC	YL	U	Y	W3	ZC	X	MALE CONTACTS
							X	X	X	A	X	X						
										J								
							X	X	X	PA	X	X						
										PC								
K P KE										H								K P KE
										N								
										V								
	X	X	X	X	X					E				X	X	X	X	
										R								
	X	X	X	X	X					T				X	X	X	X	
							X	X	X	D	X	X						
										S								
S										NF								S
	X	X	X	X	X					EF				X	X	X	X	
										RF								
							X	X	X	AS	X	X						
										JS								
KD KED										NS								KD KED
	X	X	X	X	X					ES				X	X	X	X	
										RS								
KT		X	X	X						ET					X	X	X	KT
KET										RT								KET

COMPATIBLE FEMALE FITTINGS Connector with male contacts	MALE FITTING PLUG	COMPATIBLE FEMALE FITTINGS Connector with female contacts

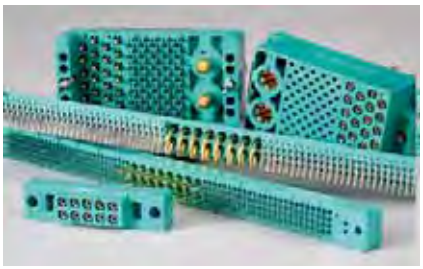
NOTES

Other Amphenol Board Level Interconnect

BRISTLE BRUSH BUNCH B3 CONTACT INTERCONNECTS

Greenbrush Low mating force connector

Amphenol's Low Mating Force Connectors are well known in the connector arena – with proven performance on the ground, in the air, and at sea. – In service for over 25 years, with over 50 million brush contacts fielded; and qualified for use on M1A2 Abrams, F-16 Falco, F/A-22 Raptor, F-35 Lightning II, AIM-132 ASRAAM and many more applications.



HDB3 CONNECTORS

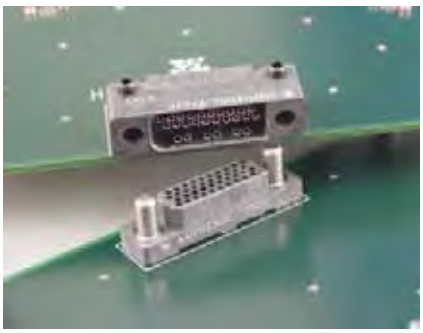
The new connector series of brush connectors incorporates an even higher density contact pattern and lower mated height than Amphenol's standard low mating force rectangular connectors. These HDB3 connectors utilize the same durable and reliable B3 brush contact, but in a tighter .070 inch X .060 inch staggered grid spacing. They offer the advantage of a higher density pattern in a compact-height connector that will take up less board space; thus saving cost over adding additional connectors to meet power requirements. HDB3 connector styles include mother board, daughter board, input/output and a stacker style.

HSB3 CONNECTORS

The HSB3 is a further new development of the higher density HDB3 connector series. The HSB3 offers higher speed as well as higher density. Benefits include:

- Allows data rates up to 3.125 Gb/s via 100 ohm matched impedance differential pairs
- Uses partially populated HDB3 mother board and daughter board inserts. See HSB3 arrangements below.

For more information, refer to Amphenol® brochure SL-402, on-line at www.amphenol-aerospace.com. or call 800-678-0141 and ask for Amphenol board level product marketing for assistance.



Other Amphenol Board Level Interconnect

BRISTLE BRUSH BUNCH B3 CONTACT INTERCONNECTS

AMPHENOL CONTINUES TO DEVELOP INTERCONNECTS THAT MEET THE DEMANDS OF THE AVIONICS INDUSTRY

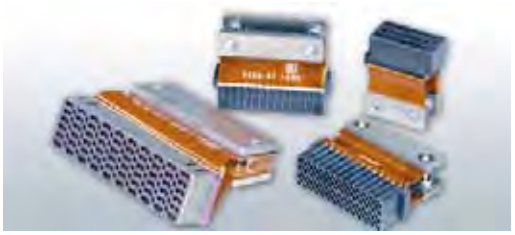
Starting with the development of the B3 contact, incorporated into the low mating force PCB connectors, the LRM line replaceable module followed as the avionics high density rectangular interconnect solution. LRM interconnects are combinations of module and backplane inserts, in one bay, two bay, three bay or more configurations. LRM products are used on major programs of aircraft and military vehicles.
This page briefly describes the LRM family of connectors. For complete information please see Amphenol® High Performance Line Replaceable Module (LRM) Interconnects catalog.*

The Brush contact has superior performance in LRM interconnects due to its low mating force, stable electrical performance and extended life. Other LRM features include:

- Backplane versatility: available with through-hole solder posts or with compliant pins for solderless applications
- Wide range of PCB/heat sink accommodations with standard surface mount tails or flex termination
- Polarization keys - up to 4096 possible keying positions
- Superior intermittancy-free performance under vibration
- Dielectric withstanding voltage: Staggered grid and GEN-X styles: 100 volts at sea level (due to the incorporation of ESD shield)
- Temperature range: suitable for vapor phase soldering; normal operating temp. is –65°C to +125°C
- Current rating: 3.0A derated to 1.5A typical (dependant on loading)

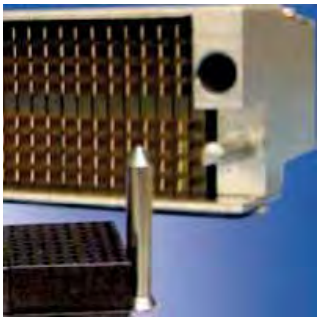
HIGH SPEED LRM GIGASTAK AND DIGASTAK INSERTS

More and more speed is needed in today's interconnection products. Amphenol has recently developed a new family of high speed LRM connectors that are capable of achieving data rates in excess of 6.25 Gbps via 100 ohm matched impedance differential pairs. Each insert arrangement has been optimized through strategic placement of signal and ground contacts for the perfect balance of impedance control and cross talk mitigation for a given data rate. As an enhancement over the standard LRM, this new series offers a unique solderless termination to module cards via Amphenol Intercon's cStack technology.



Other Amphenol Board Level Interconnect

VIPER® INTERCONNECT PLATFORM



Amphenol's VIPER® connector is a shielded, high-density, high-speed press fit, modular interconnect system. Optimized for differential pair architectures on a 1.8mm x 1.35mm grid, the waferized daughtercard assembly also provides single-ended and power wafer options integrated onto a stainless steel stiffener with stainless steel guidance and keying blocks. The backplane modules are available in 8 and 16 row increments on a 1.8mm x 1.8mm grid, with or without keying location blocks abd integrated stainless steel guidepin/keys. The new backplane signal contacts incorporate a highly reliable 4-points-of-contac beam design and the ground contacts leverage Amphenol's 40 year experience with robust compliant pin and contact fork designs.

Key Features

- Designed for 10+ Gbps data rate performance
- 100 ohm impedance for differential pair configuration
- Separable interface offering 70 single-ended signals/ 25.4mm and 63 differential signals/ 25.4mm
- Reliable, redundant opposing cantilever contact beam design
- Greater than ≠ 0.52mm X and Y translation in fully mated condition
- ESD protection supports 2-level maintenance designs
- Ruggedized vibration performance greater than 0.6 G^2/ Hz (29.28 G'rms)
- Eye-of-the-needle compliant pins designed to pierce most conformal coatings
- Flexible modular design ideal for a standard 3U and 6U applications as well as unique custom configurations incorporating RF microwave and optical MT solutions
- Fully footprint-compatible with VITA 46 and VITA 48 standards

Electrical attributes

- Data rate: 6.5 Gbps scalable 10 Gbps
- Differential Impedance: 100 ohms
- Differential Insertion Loss: -5 dB up o 5 GHz (10 Gbps)
- Differential return Loss: -5 dB up to 5 GHz (10 Gbps)
- Far End Crosstalk: -35 dB up to 8 Ghz
- Near End Crosstalk: -33 dB up to 8 Ghz
- Signal Contacts: 1 amp
- Power Wafer: 8 amps per wafer at 10°C T-Rise
- Compliant Pin to Plated Thru Hole Resistance: 1 milliohm max
- Dielectric Withstanding Voltage: 500 volts RMS
- Insultaion Resistance: 1000 megohms1

ABS developped the VIPER interconnect platform after extensive voice of the costumer (VOC) interviews. These interviews drove us to meet or exceed future avionic high-level vibration, mechanical shock and condensing moisture test requirements. Customers emphasized the need for ruggedization in the next generation of military packaging solutions thath can scale to higher bandwidths without costly and time-consuming chassis redesigns. The VIPER connector platform offers the ability to scale from 80 Mbps to over 10 Gbps while retaining the same 20.3mm to 25.4mm backplane slot pitch.

Other Amphenol Board Level Interconnect

VIPER® INTERCONNECT PLATFORM

VIPER MATERIALS AND FINISHES

Backplane Signal and Ground Contacts:
C7025 copper alloy, 0.23mm, Finish is 0.00127mm nickel minimum all over per SAE-AMS-QQ-N-290, Class I, Selective 0.00127mm gold minimum per ASTM-B488, Type II, Grade C, Class 1.27 in the mating area 0.0076mm 60/40 reflowed tin/lead minimum selectively plated in the compliant pin area. Differential, Power and Single-Ended

Daughtercard Wafer Leadframes:
C7025 copper alloy; 0.38mm, Finish is 0.00127mm nickel minimum all over per SAE-AMS-QQ-N-290, Class I, Selective 0.00127mm gold minimum per ASTM-B488, Type II, Grade C, Class 1.27 in the mating area 0.0076mm 60/40 reflowed tin/lead minimum selectively plated in the compliant pin area.

Backplane Insulators and Daughtercard
Wafer Insert Mold Material:
Glass reinforced polyester (Liquid Crystal Polymer), UL 94VO, Color Black.
Front and Rear Stiffeners: Stainless Steel, 0.6mm, Type 301, 1/2 Hard, Finish per Mill 2B.

Backplane Guide Pin: Stainless Steel, Type 303, Passivated.

Daughtercard Connector Guidance and Keying Blocks: Stainless Steel, Type 440, Passivated.

MECHANICAL ATTRIBUTES

Signal and Ground Contact Normal Force: 85 grams per beam
Signal and Ground Contact Engagement Force: 45 grams max, 35 grams typical
Signal and Ground Contact Separation Force: 30 grams max, 25 grams typical
Signal and Ground Contact Durability: 500 cycles minimum
Contact Wipe Length: 2.5mm minimum for ground contacts; 2.0mm minimum for power and signal contacts
Backplane Signal and Ground Compliant Pin Insertion Force: 4.9 kilograms maximum; 2.27 kilograms to 4.9 kilograms depending on the surface finish of PCB.
Backplane Signal and Ground Compliant Pin Retention Force: 2.27 kilograms minimum
Daughtercard Wafer Compliant Pin Insertion Force: 1.8 kilograms to 3.6 kilograms depending on the surface finish of PCB.
Daughtercard Wafer Compliant Pin Retention Force: 1.6 kilograms minimum
Translation: ≠ 0.52mm in both X and Y direction fully mated
Slot Pitch: 20, 30mm

ENVIRONMENTAL ATTRIBUTES

Temperature: -55°C to 125°C
Random Vibration: 90 minutes per X, Y and Z axis at 0.6G2/Hz
Mechanical Shock: 50 G'rms in Y axis, 80 G'rms en X and Z axis, 11 milliseconds, half sine
Temperature Life: 1000 hours at 125°C

PRINTED CIRCUIT BOARD

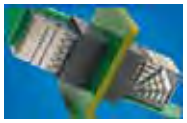
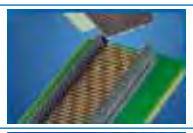
Minimum Backplane and Daughtercard Thickness: 2.28mm
Daughtercard Pattern Primary Drilled Hole Size: 0.55mm
Daughtercard Pattern Finished Hole Size: 0.46 ≠ 0.05mm
Backplane Pattern Primary Drilled Hole Size: 0.65mm
Backplane Pattern Finished Hole Size: 0.56 ≠ 0.05mm
Radial Hole Wall Deformation: 0.04mm per side as measured from drilled hole.
Axial Hole Wall Deformation: 0.03mm as measured in the vertical plane

Other Amphenol Board Level Interconnect

Amphenol tcs offers the widest range of low-crosstalk, modular connector solutions using innovative and field-proven technologies:

Backplane, Mezzanine, Orthogonal, Optical and Co-Planar.

BACKPLACE	**XCede®** 20+ Gbps		· Meets the IEEE 802.3ap v3.2 10GBASE-KR standard with margin · Up to 82 differential pairs per inch (32 differential pairs per centimeter) · Secondary routing channels significantly lower backplane costs · 85 and 100 ohm components are readily available in all configurations without the hassle ofretooling and requalification
	XCede® LC 10 Gbps		· Mates with standard XCede backplane module · Daughtercard wafer designed without resonance damping polymer to optimize cost · Fully compatible with the XCede family of components, including power and guidance · Available in 85 and 100 ohm impedance
	eHSD® 10 Gbps		· Meets the IEEE 802.3ap v3.2 10GBASE-KR standard · Fully backwards compatible with VHDM-HSD, delivering up to 10 dB lower crosstalk · Scale existing systems to next generation speeds · 25 - 38 real differential pairs per linear inch (10 - 15 real differential pairs per centimeter)
	Ventura® 6.25 - 12 Gbps		· High-density, high-performance single-ended connector · 12 Gbps differential, 6.25 Gbps single-ended · 102 - 178 real signals per inch (40 - 70 signals per centimeter) · Surface mount attach
	GbX® 5.0 Gbps		· 27.5 - 69 differential pairs per inch (11 - 27 differential pairs per centimeter) · Ideal for 4 x 3.125 XAUI links · Full range of proven components (e.g. power, guidance, polarizing) · Robust mechanical design
	GbX® U-Series 10+ Gbps		· Enhanced footprint for improved impedance and crosstalk performance · Backplane modules are compatible with all generations of GbX daughtercards · Up to 10 dB crosstalk improvement on actual backplanes
	GbX® E-Series 6.25 Gbps		· Enhanced electrical performance · Crosstalk as low as 2% · Backplane module shares the same footprint as standard GbX
	GbX® L-Series < 1 Gbps		· 1.85mm x 1.85mm open pin field version of GbX · Customize signal integrity performance by varying ground-to-signal ratio · Ideal for TTL sense and control and other low-speed data lines
	AirMax VS® 2.5 - 6.25 Gbps AirMax VS is a registered trademark of FCI		· Shieldless connector system · Cost-effective interconnect for multi-gigabit applications · Up to 63 differential pairs/inch · 3, 4, and 5-Pair standard and reverse gender available
	Aptera™ 3.125 - 6.25 Gbps		· Low-profile, high-reliability 2-piece edge-card connector · 6.25 Gbps performance differential; 3.125 Gbps single-ended · Low profile construction reduces minimum slot pitch between daughtercards to 10mm (.39") · Right angle and stacker versions available
	VHDM-HSD™ 5 Gbps		· Optimized for high-speed differential backplane applications · 25 - 38 differential pairs per inch (10 - 15 differential pairs per centimeter) · Modular design enables mix of single-ended and differential signals within the same connector
	VHDM® 3.125 Gbps		· Optimized for single-ended, high-density applications · 76 - 101 real signals per inch (30 - 40 real signals per centimeter) · Less than 5% crosstalk · Stripline shielding allows 100% of the pins to be used for signals
	VHDM® H-Series 6.25 Gbps		· Superior signal integrity · Backwards compatible with the full VHDM product family - design into same slot for fast, easy system upgrades · 0.018" (0,045mm) PCB hole for improved performance

BACKPLACE	**VHDM® L-Series** < 1 Gbps		· Open pin-field version of VHDM · Fully compatible with the full VHDM product family to optimize cost and performance by mixing high- and low-speed signals on the same connector · Ideal for TTL sense and control and other low-speed data lines
	HDM® **HDM® Plus** < 1 Gbps		· Economical 2mm modular design · 75 real signals per inch (30 contacts per centimeter) · Can operate in applications with rise times as low as 500 pico seconds
ORTHOGONAL	**Crossbow™** 20+ Gbps		· XCede® technology optimized for orthogonal midplane architectures · Meets the IEEE 802.3ap v3.2 10GBASE-KR standard with margin · Demonstrated 100 Ohms ± 5% impedance across an entire link · Less than 1.5 picoseconds in-pair skew · Crosstalk < 1.5% at 50 picoseconds · 4 x 4, 6 x 6, 8 x 8 and 8 x 9 configurations available
CO-PLANAR	**XCede®** **Co-planar** 20+ Gbps		· Right angle male enables co-planar board-to-board or board-to-cable high-speed interconnection · Mates with standard right female daughtercards · Available in 85 and 100 ohm impedance
	GbX® **Right Angle Male** **(RAM)** 5.0 Gbps		· Enables co-planar board-to-board or board-to-cable high-speed interconnection · Currently available in 2-pair configuration (27 differential pairs per linear inch) · Available in two different heights - standard RAM and extended RAM · High-speed differential and L-Series versions available
	VHDM® **Right Angle Male** **(RAM)** 3.125 Gbps		· Right angle male enables co-planar board-to-board or board-to-cable high-speed interconnection · 76 - 101 real signals per linear inch (30 - 40 real signals per centimeter) · Grow systems horizontally by creating traditional backplane components in a right angle orientation
MEZZANINE	**XCede® Stacker** 20+ Gbps		· 4-pair size provides density and mechanical robustness to address increasing I/O counts · Modular construction and guidance options allow optimized connector lengths for each application · Heights available from 15mm up to 44mm · Press fit attachment
	NeXLev® **12.5 Gbps**		· Enhanced BGA attachment process to increase SMT process yields · 125 micron co-planarity · 57 real signals per linear centimeter (145 signals per inch) · 20 stacking heights from 10-33mm
	VHDM® Stacker 3.125 Gbps		· Press fit solution for stacking applications · Route single-ended or differentially · 76 - 101 real signals per inch (30 - 40 real signals per centimeter) · Stacking heights from 18mm and up
	Aptera™ Stacker 3.125 - 6.25 Gbps		· Mezzanine solution provides the same electrical performance as standard Aptera · Mates with standard backplane modules · Available in 40mm board-to-board stack heights · Uses proven GbX compliant pin technology
	HDM® Stacker < 1 Gbps		· Available in 72 pin and 144 pin signal modules in soldertail or press fit configurations · 75 real signals per inch (30 contacts per centimeter) · 30 Amp power module, end stackable · Stacking heights from 15 to 32mm
CABLES	**XCede® Cable** **Connectors &** **Assemblies** 20+ Gbps		· Ideal for front panel and backplane connections · Provides the same industry leading electrical and mechanical performance as the standard right angle connectors · Available in 2-Pair and 4-Pair configurations · Tightly matched impedance control at cable termination · Wafers are available for 85 and 100 ohm impedance · Supports multiple cable designs ranging from 24 to 30 AWG
OPTICAL	**HD-Optyx™**		· Blind-mate, modular, fiber optic interconnect solution · High fiber count · Supports 1.25mm single-fiber and MT multi-fiber ferrules · Single-mode and multi-mode capable

Other Amphenol Board Level Interconnect

RIGID PRINTED CIRCUIT BOARD CAPABILITIES

Amphenol Printed Circuits' (APC) capabilities are among the world's broadest and most advanced, delivering consistent quality and reliability for demanding high-bandwidth systems and mission critical applications for more than 25 years. Proven engineering and manufacturing expertise eliminates printed circuit board design obstacles.

APC's North America printed circuit board operation provides tightly controlled processes for prototype through production printed circuit board volumes. The 214,000 square foot New Hampshire facility features state-of-the-art PCB manufacturing equipment and optimized material handling to ensure the highest quality and consistency.

Design formats	Mentor PADS		Cadence Zuken
Manufacturing formats	ODB++ (Preferred) DXF Gerber 274X	Autoplot Excellon HPGL	DPF Gerber 274D IPC-D-356
Maximum panel size	24" x 54" (609.1mm x 1370.6mm) 30" x 44" (761.4mm x 1116.7mm) 36" x 42" (913.7mm x 1065.9mm)		
Maximum panel thickness	0.400" (10.15mm)		
Layer count	Up to 64		
Interconnection formation types	Back Drilled Dual Diameter Thru Hole* ** Includes conductive and non-conductive fill*	Buried Electrically Isolated Blind (Laser & Mechanical)	SMT
Aspect ratio - drilled size	Backplane Daughtercard	17:1 15:1	
Finished hole size	Compliant Pin Via (A/R dependent) Buried Vias Microvias (Up to 3 electrical layers)		0.018" (0.457mm) 0.008" (0.203mm) 0.006" (0.152mm) 0.004" (0.101mm)
Blind via aspect ratio	1.25:1		
Internal features	Lines Spacing Buried Resistors Buried Capacitance Core Thickness	0.003" (0.076mm) 0.5 oz copper 0.003" (0.076mm) 0.5 oz copper No No 0.001" (0.0254mm) minimum	
External features	Lines Spacing	0.004" (0.101mm) 0.5 oz copper 0.004" (0.101mm) 0.5 oz copper	
Materials	High Tg FR4 (Including phenolic cure) Megtron 6 Isola FR408 Nelco 4000-13 & Nelco 4000-SI Rogers 4350/FR4 BT (Bismaleimide triazine resin)		Taconic Gore Cyanate Ester Polyimide Rogers 4350
Copper processing	1/4 oz up to 15 oz (U/L 7 oz)		
Impedance single & differential	± 10% ± 7.5% ± 5.0%*		** Consult factory*
Surface finishes	Electrolytic Ni/ Au (Hard & Soft) HASL Immersion Tin Reflowed Tin/Lead		ENIG Immersion Silver OSP-Entek 106
Certifications	AS9100 Certification IPC-6012 Class I, II and III ITAR Registration MIL-PRF-31032/2a		ISO 9001:2000 ISO 14001:1996 MIL-PRF-31032/1b MIL-P-55110

Other Amphenol Board Level Interconnect

FLEXIBLE AND RIGID-FLEX PRINTED CIRCUIT BOARD CAPABILITIES

APC is one of the industry's leading manufacturers of flexible and rigid-flex circuit interconnects. For more than 30 years, APC has been providing quick turn prototypes from initial concept through full production with cutting-edge technologies including interconnects with blind and buried vias, microvias, and bookbinder.

Our assembly centers of excellence, located in Nashua, New Hampshire and Nogales, Mexico are fully ITAR qualified, providing competitive value-added services including SMT, wave and manual through-hole assembly.

APC works closely with our customers to understand their true system requirements. This allows us to deliver the most cost-effective interconnect solutions with up-front engineering and consistent manufacturing techniques. From functional testing and turn-key assembly, APC's commitment to our customers success is what sets us apart in the industry.

Design formats	DXF Gerber	IGES PADS
Panel size	12" x 18" (304.5mm x 456.8mm) 18" x 24" (456.8mm x 609.1mm) 24" x 24" (609.1mm x 609.1mm) 24" x 36" (609.1mm x 913.7mm) 24" x 54" (609.1mm x 1370.6mm) *Consult Factory*	
Panel thickness	0.003" to 0.225" (0.0762mm to 5.71mm)	
Layer count	1-30+	
Interconnection formation types	Thru Hole Buried Blind	SMT Filled Vias Dual Diameter
Finished hole size	Compliant Pin (Rigid zone only) Via (A/R dependent) Buried Vias Microvias (Up to 3 electrical layers)	0.018" (0.457mm) 0.008" (0.203mm) 0.006" (0.152mm) 0.004" (0.101mm)
Blind via aspect ratio	1.25:1	
Internal features (cu weight dependent)	Line Spacing	0.003" (0.076mm) 0.003" (0.076mm)
Materials	Polyimide - FR Polyimide - AP Polyimide - GI Soldermask	Polyimide - Standard Acrylic Silver Epoxy Shielding Copper Epoxy Shielding FR4/ 24/ 26/ 28
Copper processing	1/4 oz up to 15 oz	
Impedance single & differential	± 10% ± 7%*	 ** Consult factory*
Surface finishes	HASL Reflowed Tin/ Lead OSP-Entek 106 ENIG	Immersion Tin Immersion Silver Bright Tin Electrolytic Ni/ Au (Hard & Soft)
Assembly capabilities	Full Turn-Key Thru-Hole (Wave & Manual) SMT (Pick & Place)	Wire-Bond Crimp RoHS Compliance
Assembly finishes	Conformal Coat - UR, Acrylic, Parylene, Flouropel, Glop Top	
Test capabilities	Overmolding Impedance Testing Hi-Pot up to 5,000 VDC 2,000 Points per Circuit Insulation Resistance up to 1,000 VDC Four-Wire Kelvin 0.001 Ω to 1 Ω	Bed of Nails Flying Probe Flex Cycling Environmental Functional Test
Certifications	MIL-P-50884, Types 1-5 IPC-6013 Class I, II and III, Types 1-5 ITAR Registration	ISO 9001:2000 IPC-610 AS9100 Certification

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