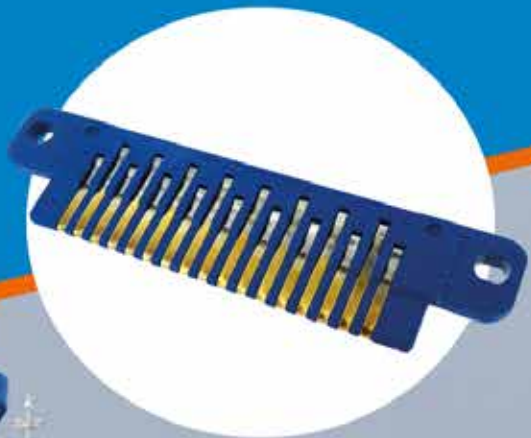
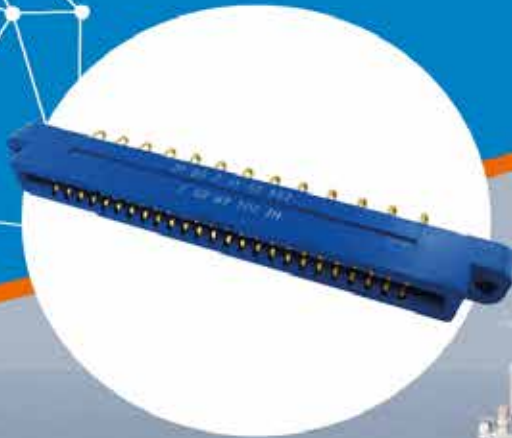


# 254 Series HE701/HE901

Board to Board Interconnect Solutions



# OUR COMPANY



## Proven excellence in interconnect solutions

- Since **1947**, Amphenol Socapex has prescribed, designed and manufactured reliable and innovative interconnection solutions for harsh environments, specializing in standard and customized electrical and fiber optic connectors, contacts, accessories and cabling solutions.
- Located in the **Mont Blanc region** of France and Pune in India, Amphenol Socapex serve customers in over 100 countries around the world.
- Amphenol Socapex is part of the leading supplier of interconnect systems **Amphenol**.



**1400+**  
employees



**142 M€**  
Net Sales 2023  
70% Export - 30% France



Thyez, **France**  
Pune, **India**

## Our expertise has no boundaries

### Integrated Production in France & India

- 24 000 m<sup>2</sup> manufacturing capacity on 2 sites
- Design and manufacturing centers in France and India
- State-of-the-art manufacturing technology

## Our markets



**Defense**



**Commercial  
Aerospace**



**Space**



**Industry**





# TECHNOLOGIES & INNOVATION

## Engineering Laboratory



**Product testing and qualification expertise in many fields:**  
 - Environmental, mechanical, electrical, chemical, climatic skills  
 - RF and fiber optics expertise

## High-Speed Expertise



**Strong expertise in high-speed signals**  
 - 3D EM simulation software & EM models  
 - Time Domain and frequency domain

## Materials Expertise



**Focus on materials expertise and manufacturing techniques to produce faster, smaller and stronger products**  
 - Advanced technology research and development: polymers, metals, platings, resins ...  
 - Cutting edge characterizations of interconnects: Radio Frequency, partial discharges ...  
 - 3D CAD mechanical software, simulation & analysis

## Eco-responsibility



**Sustainable environment approach, with pro-active management of regulations (REACH / RoHS / Conflict minerals...)**  
 - New materials development, plating, and suitable processes  
 - Recycling and rational resources consumption

## Our workshops



Our workshops located in France & India provide consistent quality adapted to your volume requirements.

**Automation & Tooling :** Tools for our different activities : molding, machining, assembly

**Molding :** Solid expertise in thermoplastic elastomer and thermoset molding

**Machining :** Manufacturing of cylindrical shells and rectangular shells

**Screw Machining :** Manufacturing of electrical contacts

**Plating :** Plating with cadmium, nickel, electroless nickel, silver, black zinc nickel, gold

**Assembly :** Connector and harness assembly (electrical & optical)

## Our certifications

Product certifications : MIL-DTL38999, EN3645, EN3155, VG (VG95328, VG95319, VG96944, VG95218, VG96949)



Certified Management System



Certified Management System



Certified Management System



Certified Management System

## Our memberships

Member of CMG (Connecting Manufacturing Group) Consortium



# 254 DF / HE901

Double-sided connectors for PCB

**The 254 series is a double sided, 2,54 [.100] pitch, range of connectors for printed circuit boards.**

**Both direct or indirect connections could be made:**

- For direct connection, the female receptacle mates with a  $1,6 \pm 0,2$  [.063  $\pm$  .008] printed circuit board
- For indirect connection, the female receptacle mates with the male plugs

## A well-proven technology

- The 254 series uses a 2,54[.100] pitch, double sided.
- The arrangements available are from 2x13 contacts to 2 x 55 contacts.
- The contact technology is based on a turning fork concept.

## A simple choice of solutions, adaptable to all type of configurations

- For motherboard: female receptacles with straight PC tails (Y).
- For extender boards: female extender with right angle PC tails (YC).
- For mounting on cables: female receptacle with solder cup contacts (Z).
- In case of direct connection: the female receptacle mates directly with a 1,6 [.063] printed circuit board.
- In case of indirect connection, the male plug with SMT contacts (U) is used.
- Various polarization system are available (for both direct or indirect connection).

**The 254 series complies with here below standards:**

NFC/UTE 93-423  
HE901

## QUICK SELECTION GUIDE

Connector 254 DFN / HE901			+	Polarization system
Signal contacts		Number of contacts		
<b>Female</b>	<b>Male</b>	2 x 13		For direct connection  For indirect connection 254DFD
Straight PC tails Y	SMT (U)	2 x 19		
		2 x 25		
		2 x 31		
		2 x 37		
		2 x 43		
Solder cup Z		2 x 49		
		2 x 50		
		2 x 55		
Right angle PC tails (YC, for extender)				
<b>Page 8</b>	<b>Page 8</b>	<b>Page 10 to 12</b>		<b>Page 13</b>

# 254 DF / HE901 Series



254 DF / HE901 Series

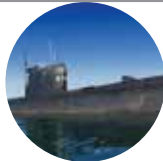
## Table of contents

254DF/HE9 product range .....	4
Signal contacts .....	8
Polarization .....	9
Typical arrangements and layouts, female receptacle .....	10
Typical arrangements and layouts, female extender .....	11
Typical arrangements and layouts, male plug .....	12
Typical arrangements and layouts, polarization system for indirect connection .....	13
Tooling .....	14

The 254 DF/ HE9 series serves various **markets**, including :



Security & Defense



Navy



Industrial

## 254 DF / HE901 &gt;&gt;&gt; GENERAL SPECIFICATIONS

MEDIUM  
DENSITY

- 2,54[.100] pitch
- Proven and reliable double-sided PCB connectors
- Direct connection: female receptacle mates with  $1,6 \pm 0,2$  [.063  $\pm$  .008] printed circuit board
- Indirect connection: female receptacle mates with male plug

## Main characteristics

- 2 x 13 to 2 x 55 signal contacts
- 3A per signal contact
- Fully compatible with all the standard connectors HE901 on the market

## Markets

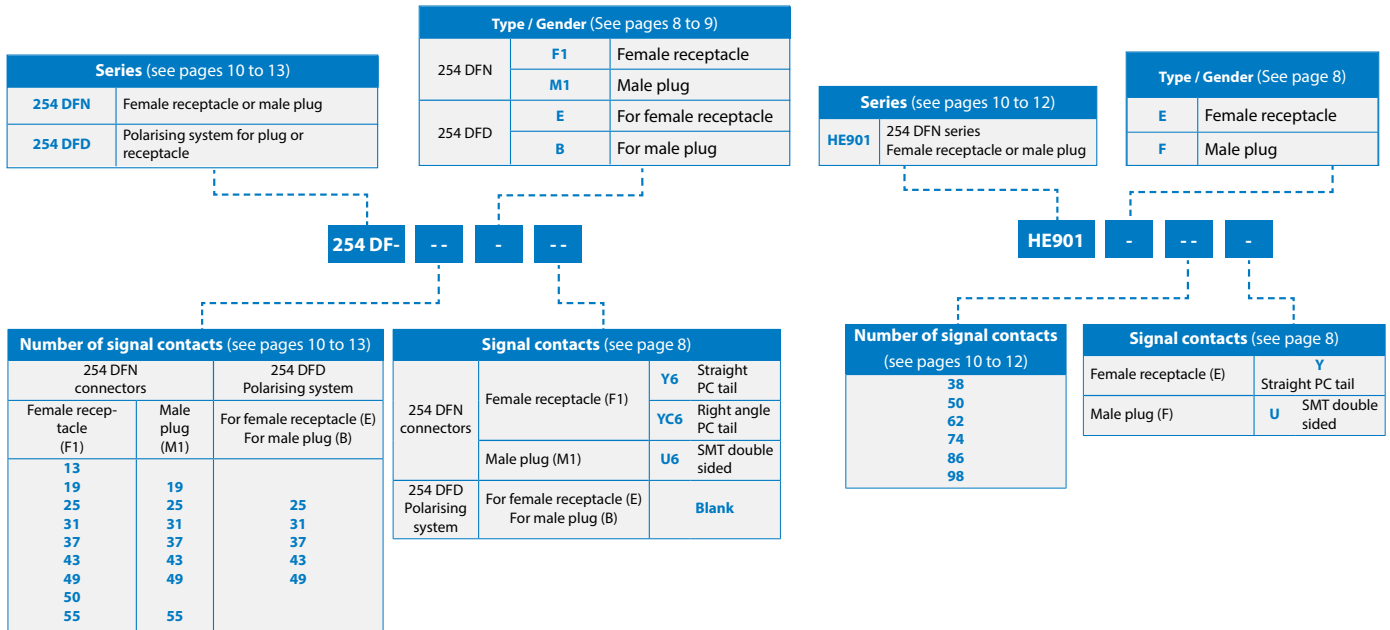


254 DF / HE901

## Standard

NFC/UTE 93/423  
HE901

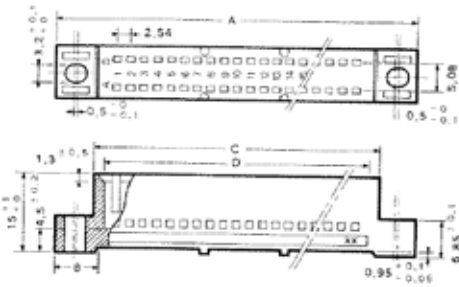
## How to order



## 254 DF / HE901 &gt;&gt;&gt; GENERAL SPECIFICATIONS

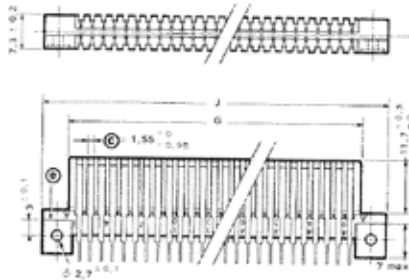
## Dimensional characteristics

## Receptacle

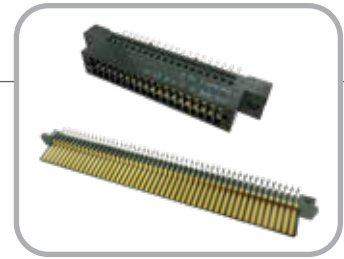


A = 53,8 [2.118] to 160,40 [6.315]  
 B = 10 [.394]  
 H = 15 [.591]

## Plug



J = 62,58 [2.464] to 154,02 [6.064]  
 B = 7,3 [.287]  
 H = XXX[ ]



## Female contact



## Bifurcated top removable contact (Y &amp; Z)

## Material

- Copper alloy

## Plating

- Terminations: tin lead
- Active contact area: gold over XXX

## Male contact



## Material

- Copper alloy

## Plating

- Terminations: tin lead
- Active contact area: gold over XXX

## Materials

- **Polarising key:** thermoplastic
- **Polarizing system for indirect connection:** PBT, glass loaded
- **Plastic insert:** self extinguishing thermoset

MECHANICAL CHARACTERISTICS	254 DF / HE901
<b>Backoff</b> <sup>1</sup> (mm)	1.25 <sub>MAX</sub>
<b>Mating force</b> per contact (N)	2.7 <sub>MAX</sub>
<b>Unmating force</b> per contact (N)	2.7 <sub>MAX</sub>
<b>Contact retention in housing (N)</b>	
<b>Solder on wire</b>	40 <sub>MIN</sub>
<b>Stright PC tail / SMT</b>	20 <sub>MIN</sub>
ENVIRONMENTAL CHARACTERISTICS	
<b>Thermal shocks</b> (°C)	-55 / +125
<b>Salt Spray</b> (hours)	96
ELECTRICAL CHARACTERISTICS	
<b>Current rating</b> per contacts (A)	3
<b>Insulation resistance</b> (GΩ)	5 <sub>MIN</sub>
<b>Contact resistance</b> (mΩ)	10 <sub>MAX</sub>
<b>Dielectric Withstanding Voltage</b> (Vrms)	1000
<b>Capacitance</b> between contacts (pF)	5 <sub>MAX</sub>
<b>Service voltage</b> at 50Hz	250

<sup>1</sup>: When both connectors are fully mated, the backoff is the maximum distance the connectors can be unmated while functioning properly

## 254 DF / HE901 >>> GENERAL SPECIFICATIONS (1)

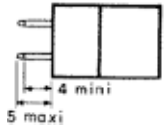
Direct connection is made by a female receptacle directly mated with a  $1,6 \pm 0,2$  [ $.063 \pm .008$ ] printed circuit board

Indirect connection is made by a female receptacle mated with a male plug (two-part connectors)



### FEMALE CONTACTS

#### Straight PC tail



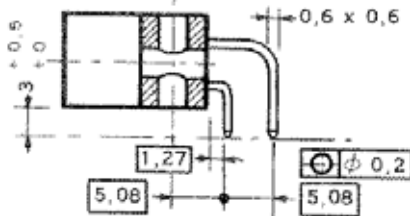
- Thru hole soldering
- Used for direct connection: mate with a  $1,6 \pm 0,2$  [ $.063 \pm .008$ ] printed circuit board
- Used for indirect connection: mate with male plug
- Mother board
- PCB thickness:  $3,2_{MAX}$  [ $.126$ ]
- To order the contact alone: 049508



Termination style

254 DF	Y6
HE901	Y

#### Right angle PC tail



- Thru hole soldering
- Used for direct connection: mate with a  $1,6 \pm 0,2$  [ $.063 \pm .008$ ] printed circuit board
- Used for indirect connection: mate with male plug
- Extender board
- Termination section:  $0,6 \times 0,6$  [ $.024 \times .024$ ]

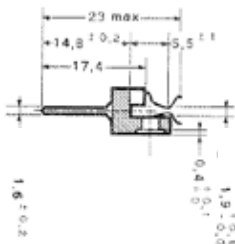


Termination style

254 DF	YC6
--------	-----

### MALE CONTACTS

#### SMT double side



- SMT soldering
- Used for indirect connection: mate with female receptacle
- Double side daughter board
- PCB thickness:  $1,6 \pm 0,2$  [ $.063 \pm .008$ ]



Termination style

254 DF	U6
HE901	U

\*\* Except for crimp contacts

\* Consult us

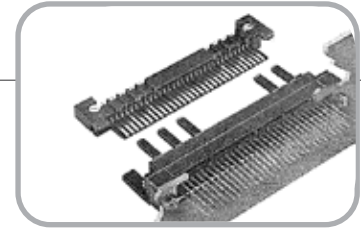
All dimensions are given for information only and are in mm [inch], except as otherwise specified



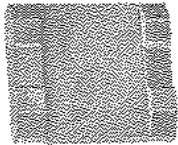
## 254 DF / HE901 >>> POLARIZATION

### FOR DIRECT CONNECTION

Direct connection is made by a female receptacle directly mated with a  $1,6 \pm 0,2$  [.063 ± .008] printed circuit board



#### With a loss of contacts



- A polarizing key is mounted in place of a contact pair, with a corresponding cut-out in the circuit board

Part number:

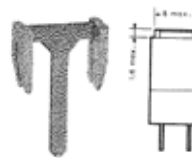
Width 1<sub>MAX</sub> [.039]

Width 1,2<sub>MAX</sub> [.047]

049534

021736

#### With a loss of contacts



- A polarizing key is mounted on the barrier between two contact cavities, with a corresponding cut-out in the circuit board
- **1:** Polarising key mounted in a receptacle

Width 0,7<sub>MAX</sub> [.028]

020917

### FOR INDIRECT CONNECTION

Indirect connection is made by a female receptacle mated with a male plug (two-part connectors)

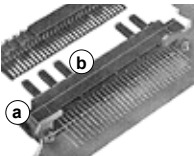
The polarizing system is done by:

A polarization part, mounted on the plug

A polarization part mounted on the receptacle

Polarization is made without loss of contacts

#### For female receptacle

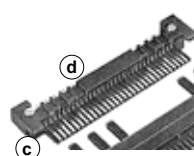


- 2 guides (a)
- 10 keying fingers (b)
- 5 identified by letters, from A to E on one side
- 5 identified by figures, from 1 to 5 on the other side
- To key the connection, break off 1 to 3 fingers on each side (no matter the position)
- It is preferable to keep at least 2 fingers on each side, corresponding to the opened cavities on the plug system

Part number

254 DFD\*\*E

#### For male plug



- 2 posts (c) for guiding
- 10 closed cavities (d)
- 5 identified by letters, from A to E on one side
- 5 identified by figures, from 1 to 5 on the other side
- To key the connection, open 1 to 4 cavities on each side (no matter the position) corresponding to the remaining fingers on the receptacle system

Part number

254 DFD\*\*B

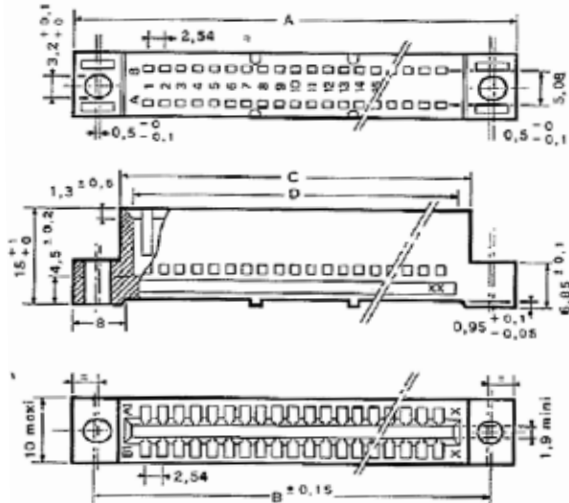
## 254 DF / HE901 &gt;&gt;&gt; TYPICAL ARRANGEMENTS

## FEMALE RECEPTACLES

Equipped with straight PC tails or solder cup contacts (Y or Z)



## External dimensions

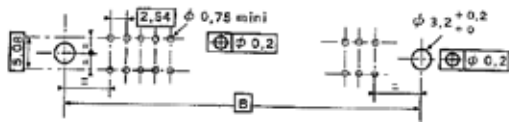


\*\* : number of contacts  
\* : type of contacts (Z or Y)

Part number

254 DFN\*\* F1 \*6  
HE901 E \*\* \*

## Mother board layout

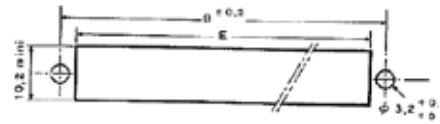


- Female receptacle equipped with straight PC tails (Y)
- The positional tolerance of the holes is 0,1 [.004] from the theoretical position

Part number

254 DFN\*\* F1 Y6  
HE901 E \*\* Y

## Panel cut outs

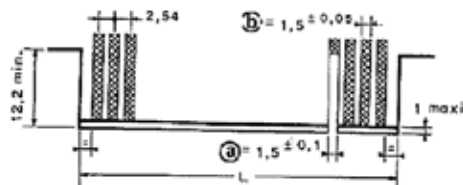


- Female receptacle equipped with solder cup contacts (Z)

Part number

254 DFN\*\* F1 Z6  
HE901 E \*\* Z

## Daughterboard layout (for direct connection only)



- Direct connection is made by a female receptacle directly mated with a  $1,6 \pm 0,2$  [.063 ± .008] printed circuit board
- Daughterboard cut outs
- (a) Slot for polarizing key 049534 or 021736
- (b) Track width

Number of contacts	A <sup>-0</sup> <sub>-1</sub>	B	C <sup>-0</sup> <sub>-0,5</sub>	D <sup>+0,2</sup> <sub>+0</sub>	E <sub>MIN</sub>	L <sup>-0</sup> <sub>-0,2</sub>	Weight (g)
2 x 13	53,8 [2.118]	46,7 [1.839]	39,5 [1.555]	35,4 [1.394]	41,2 [1.622]	35,3 [1.390]	9
2 x 19	69,00 [2.716]	62,00 [2.441]	54,70 [2.154]	50,60 [1.992]	56,40 [2.220]	50,50 [1.988]	12
2 x 25	84,20 [3.315]	77,20 [3.039]	70,00 [2.756]	65,90 [2.594]	71,60 [2.819]	65,80 [2.591]	15
2 x 31	99,50 [3.917]	92,50 [3.642]	85,20 [3.354]	81,10 [3.193]	86,90 [3.421]	81,00 [3.189]	19
2 x 37	114,70 [4.516]	107,70 [4.240]	100,50 [3.957]	96,40 [3.795]	102,10 [4.020]	96,30 [3.791]	22
2 x 43	129,90 [5.114]	122,90 [4.839]	115,70 [4.555]	111,60 [4.394]	117,30 [4.618]	111,50 [4.390]	25
2 x 49	145,20 [5.717]	138,20 [5.441]	131,00 [5.157]	126,80 [4.992]	132,60 [5.220]	126,70 [4.988]	28
2 x 50	147,74 [5.817]	140,74 [5.541]	133,54 [5.257]	129,34 [5.092]	135,34 [5.328]	129,24 [5.088]	29
2 x 55	160,40 [6.315]	153,40 [6.039]	146,20 [5.756]	142,10 [5.594]	147,80 [5.819]	142,00 [5.591]	32

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

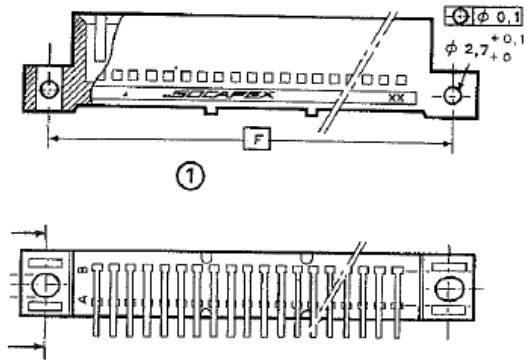
## 254 DF / HE901 &gt;&gt;&gt; TYPICAL ARRANGEMENTS

## FEMALE EXTENDER

Equipped with right angle PC tails (YC6)



## External dimensions

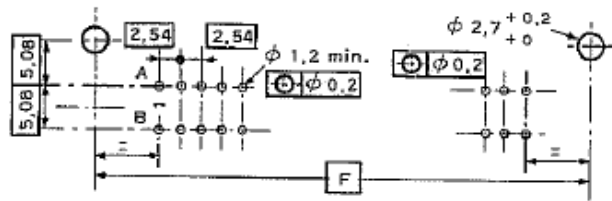


- \*\*: number of contacts
- For other dimensions, see page 10, female receptacles
- The axis of the board soldered to the extender is offset with respect to the connecting board by  $5 [1.772] + e/2$ , where e is the thickness of the board soldered to the extender

Part number

254 DFN\*\* F1/YC6

## External board layout



- Female receptacle equipped with right angle PC tails (YC)
- The marking of rows A and B and contact 1 are given by way of indication

Part number

254 DFN\*\* F1/YC6

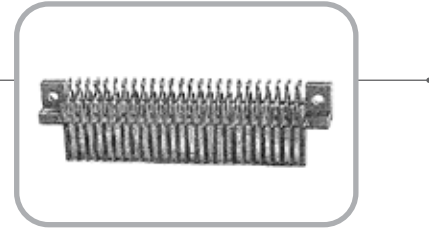
Number of contacts	F ± 0.15	Weight (g)
2 x 19	61,5 [2.421]	14
2 x 25	76,7 [3.020]	17
2 x 31	92 [3.622]	20
2 x 37	107,2 [4.220]	24
2 x 43	122,4 [4.819]	27
2 x 49	137,7 [5.421]	31
2 x 50	104,24 [4.104]	32

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

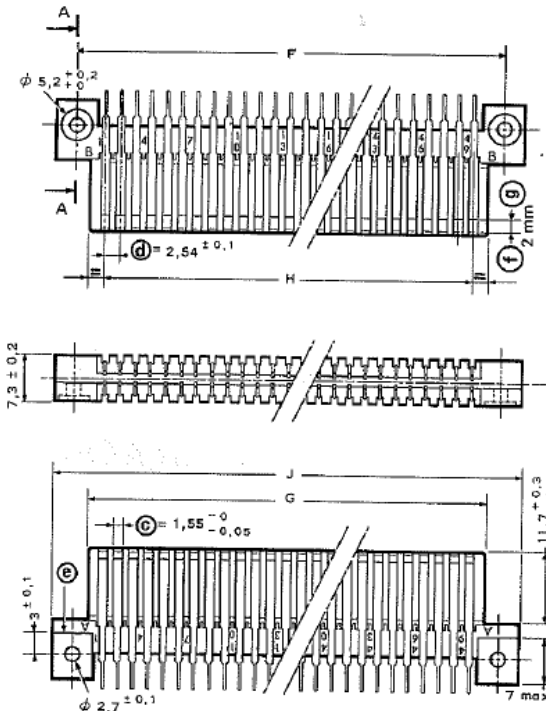
## 254 DF / HE901 &gt;&gt;&gt; TYPICAL ARRANGEMENTS

## MALE PLUG

Equipped with SMT contacts (U)



## External dimensions

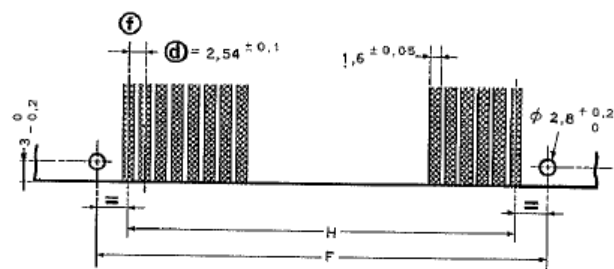


- \*\*: number of contacts
- (a) moulding board slot
- (b) over contacts
- (c) over contacts
- (d) non cumulative tolerance
- (e) board edge
- (f) end of the standard contact
- (g) end of the short contact

Part number

254 DFN \*\* M1 U6  
HE901 F\*\* U

## Daughterboard layout (for indirect connection only)



- Indirect connection is made by a female receptacle mated with a male plug (two-part connectors)
- Daughterboard cut out
- (d) non cumulative tolerance
- (f) reference axis

Part number

254 DFN \*\* M1 U6  
HE901 F\*\* U

Number of contacts	F ± 0,2 [.008]	H ± 0,1 [.004]	J <sub>-1</sub> <sup>-0</sup>	G <sub>-0,2</sub> <sup>-0</sup>	Weight (g)
2 x 19	55,88 [2.200]	45,72 [1.800]	62,58 [2.464]	50,50 [1.988]	9
2 x 25	71,12 [2.800]	60,96 [2.400]	77,82 [3.064]	65,80 [2.591]	11
2 x 31	86,36 [3.400]	76,20 [3.000]	93,06 [3.664]	81,00 [3.189]	13
2 x 37	101,6 [4.000]	91,44 [3.600]	108,30 [4.264]	96,30 [3.791]	15
2 x 43	116,84 [4.600]	106,68 [4.200]	123,54 [4.864]	111,50 [4.390]	17
2 x 49	132,08 [5.200]	121,92 [4.800]	138,78 [4.464]	126,7 [4.988]	19
2 x 55	147,32 [5.800]	137,16 [5.400]	154,02 [6.064]	141,98 [5.590]	21

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



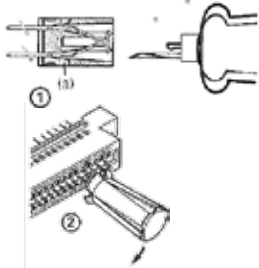


## 254 DF / HE901 &gt;&gt;&gt; TOOLING

## REMOVAL TOOLS

**WARNING:** a contact extracted must not be used again

49532



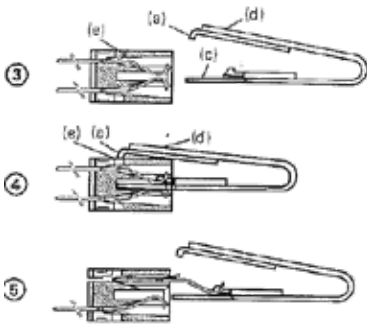
- Contact removal tool for receptacles mounted one against the other
- Straight PC tails (Y) or solder cup contacts (Z)
- Front release

1. Insert the tool in the cavity, between the contact and the edge of the moulding, perpendicular to the mating face (1). The tip of the tool should be visible through the window in the moulding (a)
2. Push the tool home, keeping it perpendicular until it contacts the moulding (2)
3. Push the tool right over towards the outer edge of the mounting (2)
4. Pull the tool out, the contact will come with it

Part number

049532

20300



- Contact removal tool for receptacles mounted on 15,24 [.600] centres
- Straight PC tails (Y) or solder cup contacts (Z)
- Front release

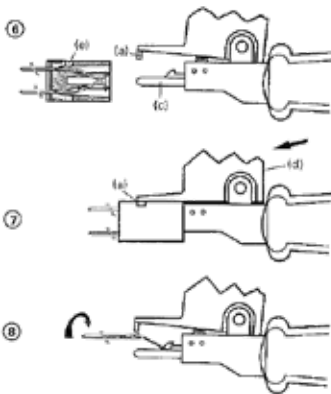
(3): Respective position of tool and receptacle

1. Push the tool as far as it will go (4)
- The guide (c) abuts the bottom of the moulding
- The spigot (a) is opposite the slot (e)
2. Press on part (d) of the tool, the contact tongue is disengaged from its place
3. Cease pressing on part (d)
4. Withdraw tool and the imprisoned contact (5)

Part number

020300

20188



- Contact removal tool for receptacles mounted on 12,7 [.500] centres
- Straight PC tails (Y) or solder cup contacts (Z)
- Front release

(6): Respective positions of tool and receptacle (guide (c) along the axis of the connector)

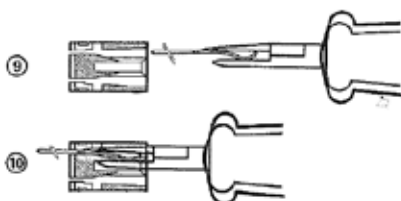
1. Push the tool home (7)
- The guide (c) goes to the bottom of the moulding
- The spigot (a) is opposite the hole (e)
2. Press on part (d) of the tool, in the direction indicated by the arrow (7). The contact retention is released
3. Release pressure (d)
4. Pull back the tool with contact attached (8)
5. Remove the contact by turning it through 90°

Part number

020188

## INSERTION TOOLS

49533



- Contact insertion tool for receptacles
- Straight PC tails (Y) or solder cup contacts (Z)

1. Insert the contact into the tool (9)
2. Insert the tool and contact together in the moulding cavity, from the board side, in the position shown on the figure (9)
3. Press the tool right home. The contact tongue positions itself in its slot (10)
4. Withdraw tool. The contact held by the tongue should remain in recess

Part number

049533



# 254 / HE701

## Single-sided connectors for PCB

**The 254 series is a single sided, 2,54 [.100] pitch, range of connectors for printed circuit boards.**

**Both direct or indirect connections could be made:**

- For direct connection, the female receptacle mates with a  $1,6 \pm 0,2$  [.063  $\pm$  .008] printed circuit board
- For indirect connection, the female receptacle mates with the male plugs

### A well-proven technology

- The 254 series uses a 2,54[.100] pitch, single sided
- The arrangements available are from 11 contacts to 47 contacts for 254 series and 6 contacts to 24 contacts for 508 series

### A simple choice of solutions, adaptable to all type of configurations

- 2 receptacle versions are available:
  - Type A:
    - Floating contacts
    - Terminations in two rows, 2,54[.100] pitch
  - Type B:
    - Removable contacts
    - Terminations in two rows, 5,08[.200] pitch
- For motherboard: female receptacle with straight PC tails (Y)
- For mounting on cables: female receptacle with solder cup contacts (Z)
- For extender boards
  - Female extender with right angle PC tails (YC)
  - Type B only
    - Removable contacts
    - Terminations in two rows, 5,08[.200] pitch
- In case of direct connection: the female receptacle mates directly with a  $1,6 \pm 0,2$  [.063  $\pm$  .008] printed circuit board
- In case of indirect connection, the male plug with right angle PC tails is used. 3 versions are available
  - A: standard types as per norm
  - B: open ended mounting ears
  - C: without mounting ears
- Various polarization system are available (for both direct or indirect connection)
- The 508 series is a derivate version of the standardized range, with only odd-numbered contacts mounted

**The 254 series complies with here below standards:**

NFC/UTE 93-421  
HE701

Series	Gender	Signal contacts	Number of contacts	Polarization system
245 series or 508 series	<b>Female receptacle</b> Type A Type B	Straight PC tails Y Solder cup Z Right angle PC tails (YC, for extender)	From 6 to 47	+
	<b>Male plug</b> Type A Type B Type C	Right angle PC tails		
Pages 18 & 27	Pages 23 to 25	Pages 20 & 21	Pages 23 to 25	Page 26



# 254 / HE701 Series



254 / HE701 series

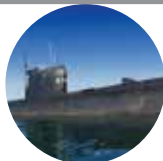
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The 254 / HE7 series serves various **markets**, including :



Security & Defense



Navy



Industrial

## 254 / HE701 >>> GENERAL SPECIFICATIONS



- 2,54[.100] pitch
- Proven and reliable double-sided PCB connectors
- Direct connection: female receptacle mates with 1,6 ± 0,2 [.063 ± .008] printed circuit board
- Indirect connection: female receptacle mates with male plug

### Main characteristics

- 2 x 13 to 2 x 55 signal contacts
- 3A per signal contact
- Fully compatible with all the standard connectors HE701 on the market

### Markets

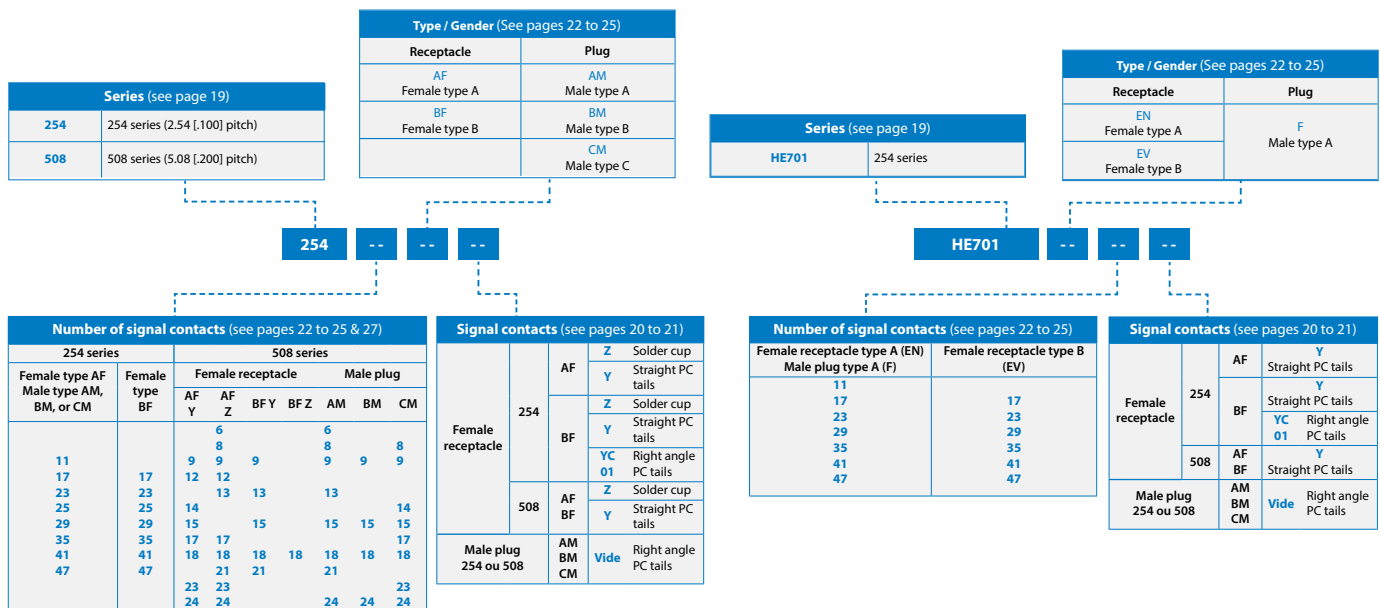


254 / HE701

### Standard

NFC/UTE 93/421  
HE701

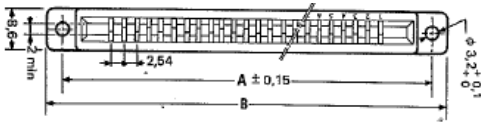
### How to order



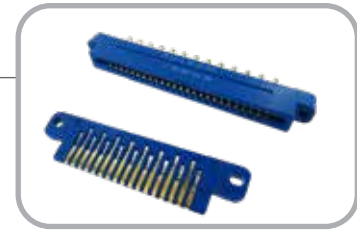
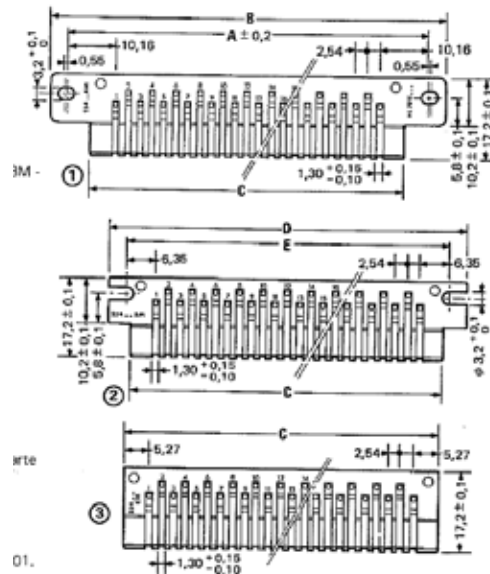
## 254 / HE701 &gt;&gt;&gt; GENERAL SPECIFICATIONS

## Dimensional characteristics

## Receptacle



## Plug



## Receptacle:

- B = 53,1 [2.091] to 144,6 [5.693] (type A)
- B = 68,4 [2.693] to 144,6 [5.693] (type B)

## Plug:

- B = 53,1 [2.091] to 144,6 [5.693] (Type A)
- D = 45,5 [1.791] to 136,9 [5.390] (Type B)
- C = 35,95 [1.415] to 127,40 [5.016] (Type C)

## 508 series:

Connectors are made from the same mouldings and contacts as 254 series. Only odd-numbered contacts are mounted

## Female contact



Floating lyre contact (Y & Z) for type A  
Patented double lyre contact (Z, Z & YC) for type B

## Material

- Copper alloy

## Plating

- Terminations: gold over nickel
- Active contact area: gold over nickel

## Materials

- **Polarising key:** thermoplastic
- **Plastic insert:** thermoset

## Male contact



## Material

- Copper alloy

## Plating

- Terminations: gold over nickel
- Active contact area: gold over nickel

## MECHANICAL CHARACTERISTICS

## 254 / HE701

<b>Backoff<sup>1</sup></b> (mm)	1.20 <sub>MAX</sub>
<b>Mating force</b> per contact pair (N)	
<b>Unmating force</b> per contact pair (N)	2.7 <sub>MAX</sub>
<b>Contact retention in housing (N)</b>	
<b>Solder on wire</b>	20 <sub>MIN</sub>
<b>Straight PC tail / SMT</b>	20 <sub>MIN</sub>

## ENVIRONMENTAL CHARACTERISTICS

<b>Thermal shocks</b> (°C)	-55 / +125
----------------------------	------------

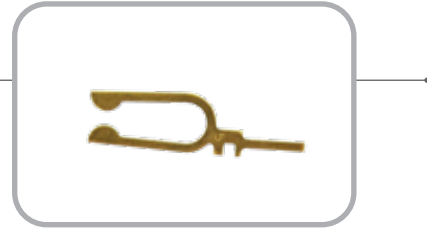
## ELECTRICAL CHARACTERISTICS

<b>Current rating</b> per contacts (A) direct connection	3
<b>Current rating</b> per contacts (A) indirect connection	5
<b>Insulation resistance</b> (GΩ)	5 <sub>MIN</sub>
<b>Contact resistance</b> (mΩ)	10 <sub>MAX</sub>
<b>Capacitance</b> between contacts (pF)	5 <sub>MAX</sub>
<b>Service voltage</b> at 50Hz	200
<b>Test voltage</b> at sea level (Vrms)	900
<b>Test voltage</b> at 20 mbar (Vrms)	200

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

## 254 / HE701 >>> SIGNAL CONTACT

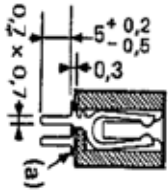
Direct connection is made by a female receptacle directly mated with a  $1,6 \pm 0,2$  [.063  $\pm$  .008] printed circuit board  
Indirect connection is made by a female receptacle mated with a male plug (two-part connectors)



### FEMALE CONTACTS TYPE A

Floating contacts, terminations in two row, 2,54 [.100] pitch

#### Straight PC tail



- Thru hole soldering
- Used for direct connection: mate with a  $1,6 \pm 0,2$  [.063  $\pm$  .008] printed circuit board
- Used for indirect connection: mate with male plug
- Mother board
- Termination section:  $0,7 \times 0,7$  [.028  $\times$  .028]
- PCB thickness: 3,2 MAX [.126]
- Weight: 0,15g

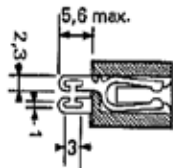
(a): insulated washer stuck on the underside of the end feet of connectors to enable board cleaning



Termination style

254 \*\* AF Y  
HE701 EN \*\* Y

#### Solder cup



- Hard-soldering on wire
- O: 1 MAX [.039] on core section
- Used for direct connection: mate with a  $1,6 \pm 0,2$  [.063  $\pm$  .008] printed circuit board
- Used for indirect connection: mate with male plug
- Weight 0,16g



Termination style

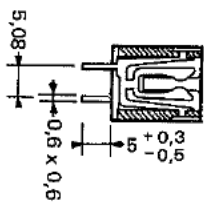
254 \*\* AF Z  
HE701 EN \*\* Z

### FEMALE CONTACTS TYPE B

Removable contacts, terminations in two row, 5,08 [.200] pitch

The mention → or ← means the contact removal direction

#### Straight PC tail



- Thru hole soldering
- Used for direct connection: mate with a  $1,6 \pm 0,2$  [.063  $\pm$  .008] printed circuit board
- Used for indirect connection: mate with male plug
- Mother board
- Termination section:  $0,6 \times 0,6$  [.024  $\times$  .024]
- PCB thickness: 3,2 MAX [.126]
- Weight: 0,27g
- To order the contact alone

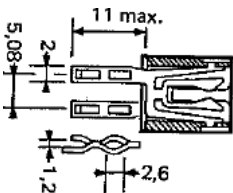
043247



Termination style

254 \*\* BF Y  
HE701 EV \*\* Y

#### Solder cup



- Hard-soldering on wire
- For soldering two wires, one of which can be a busbar joining adjacent connectors (supply, ground)
- Used for direct connection: mate with a  $1,6 \pm 0,2$  [.063  $\pm$  .008] printed circuit board
- Used for indirect connection: mate with male plug
- Weight: 0,37g
- To order the contact alone

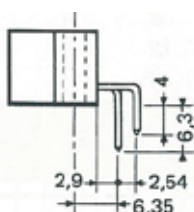
042635



Termination style

254 \*\* BF Z  
HE701 EV \*\* Z

#### Right angle PC tail



- Thru hole soldering
- Used for direct connection: mate with a  $1,6 \pm 0,2$  [.063  $\pm$  .008] printed circuit board
- Used for indirect connection: mate with male plug
- Extender board
- Weight: 0,31g

Termination style

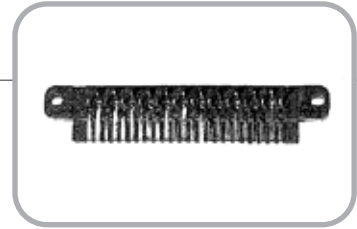
254 \*\* BF YC01



## 254 / HE701 >>> SIGNAL CONTACT

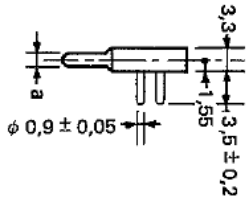
Direct connection is made by a female receptacle directly mated with a  $1,6 \pm 0,2$  [.063  $\pm$  .008] printed circuit board

Indirect connection is made by a female receptacle mated with a male plug (two-part connectors)



### MALE CONTACTS

#### Right angle PC tail



- Thru hole soldering
- Used for indirect connection: mate with female receptacle
- Daughter board
- Termination diameter:  $0,9 \pm 0,05$  [.035  $\pm$  .002]
- PCB thickness: 2,6 MAX [.102]
- (a): 1,9 [.075] over the moulding,  $1,6 \pm 0,15$  [.063  $\pm$  .006] over the contacts



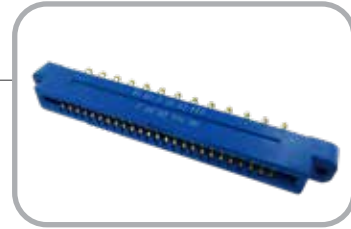
Termination style

254 \*\* AM  
HE701 F \*\* Y  
254 \*\* BM  
254 \*\* CM

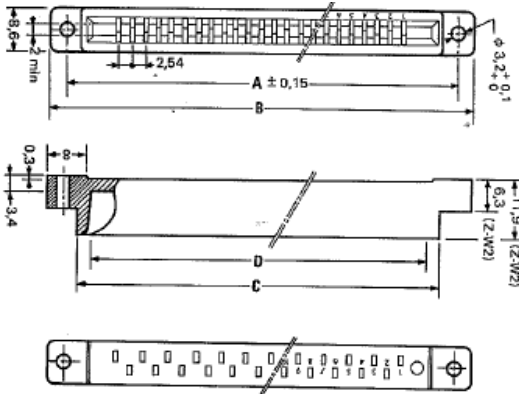
## 254 / HE701 &gt;&gt;&gt; TYPICAL ARRANGEMENTS

## FEMALE RECEPTACLES TYPE A

Equipped with straight PC tails or solder cup contacts (Y or Z)



## External dimensions



\*\* : number of contacts  
\* : type of contacts (Z or Y)

Part number

254 \*\* AF \*  
HE701 EN \*\*

## Mother board layout

- Female receptacle equipped with straight PC tails (Y)
- The positional tolerance of the holes is 0,1 [0.04] from the theoretical position
- The board is shown from the connector side. Contact #1 is given for reference
- Having mounted the connector on the board, insert a male plug or a board to correctly position the contacts

Part number

254 \*\* AF Y  
HE701 EN \*\*Y

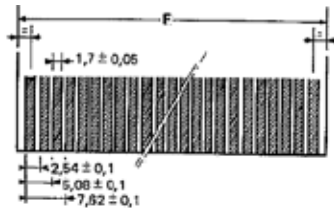
## Panel cut outs

- Female receptacle equipped with solder cup contacts (Z)

Part number

254 \*\* AF Z  
HE701 EN \*\* Z

## Daughterboard layout (for direct connection only)



- Direct connection is made by a female receptacle directly mated with a  $1,6 \pm 0,2$  [0.63 ± .008] printed circuit board
- Daughterboard cut outs

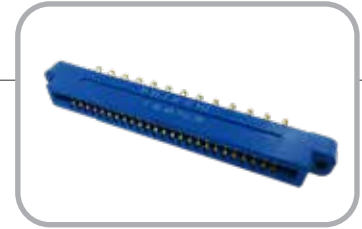
Number of contacts	A	B ± 0.3 [± .012]	C ± 0.3 [± .012]	D <sup>+0.15</sup> / <sub>-0.1</sub>	E <sub>MIN</sub>	F ± 0.1 [± .004]	Housing weight (g)
11	46,7 [1.839]	53,1 [2.091]	40,8 [1.606]	36,05 [1.419]	41,40 [1.630]	35,85 [1.411]	5,8
17	62,0 [2.441]	68,4 [2.693]	56,1 [2.209]	51,30 [2.020]	56,60 [2.228]	51,10 [2.012]	7,6
23	77,2 [3.039]	83,6 [3.291]	71,3 [2.807]	66,55 [2.620]	71,90 [2.831]	66,35 [2.612]	9,3
25	82,3 [3.241]	88,7 [3.492]	76,4 [3.008]	71,62 [2.820]	77,00 [3.031]	71,42 [2.812]	9,9
29	92,5 [3.642]	98,9 [3.894]	86,6 [3.409]	81,80 [3.220]	87,10 [3.429]	81,60 [3.213]	11,1
35	107,7 [4.240]	114,1 [4.492]	101,8 [4.008]	97,00 [3.819]	102,40 [4.031]	96,80 [3.811]	12,8
41	122,9 [4.839]	129,3 [5.091]	117,0 [4.606]	112,25 [4.419]	117,60 [4.630]	112,05 [4.411]	14,6
47	138,2 [5.441]	144,6 [5.693]	132,3 [5.209]	127,50 [5.020]	132,90 [5.232]	127,30 [5.012]	16,4

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

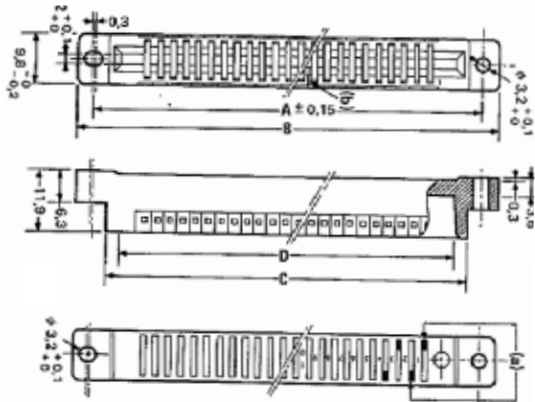
# 254 / HE701 >>> TYPICAL ARRANGEMENTS

## FEMALE RECEPTACLES TYPE B

Equipped with straight PC tails or solder cup contacts (Y or Z)



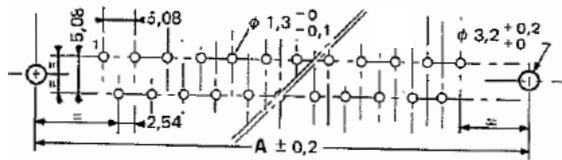
### External dimensions



- \*\*: number of contacts
- \*: type of contacts (Z or Y)
- (a): position of contact termination
- (b): identification of every 10<sup>th</sup> contact on mating side

Part number **254 \*\* BF \***  
**HE701 EV \*\***

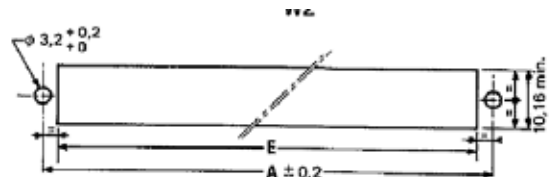
### Mother board layout



- Female receptacle equipped with straight PC tails (Y)
- The positional tolerance of the holes is 0,1 [.004] from the theoretical position
- The board is shown from the connector side. Contact #1 is given for reference

Part number **254 \*\* BF Y**  
**HE701 EV \*\* Y**

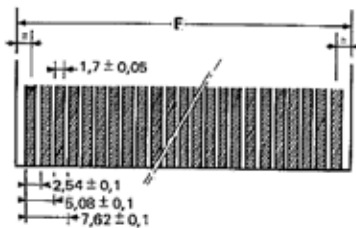
### Panel cut outs



- Female receptacle equipped with solder cup contacts (Z)

Part number **254 \*\* BF Z**  
**HE701 EV \*\* Z**

### Daughterboard layout (for direct connection only)



- Direct connection is made by a female receptacle directly mated with a 1,6 ± 0,2 [.063 ± .008] printed circuit board
- Daughterboard cut outs

Number of contacts	A	B ± 0.3 [± .012]	C ± 0.3 [± .012]	D <sup>+0.15</sup> / <sub>-0.1</sub>	E <sub>MIN</sub>	F ± 0.1 [± .004]	Housing weight (g)
17	62,0 [2.441]	68,4 [2.693]	56,1 [2.209]	51,30 [2.020]	56,60 [2.228]	51,10 [2.012]	8,7
23	77,2 [3.039]	83,6 [3.291]	71,3 [2.807]	66,55 [2.620]	71,90 [2.831]	66,35 [2.612]	10,5
25	82,3 [3.241]	88,7 [3.492]	76,4 [3.008]	71,62 [2.820]	77,00 [3.031]	71,42 [2.812]	11,2
29	92,5 [3.642]	98,9 [3.894]	86,6 [3.409]	81,80 [3.220]	87,10 [3.429]	81,60 [3.213]	12,3
35	107,7 [4.240]	114,1 [4.492]	101,8 [4.008]	97,00 [3.819]	102,40 [4.031]	96,80 [3.811]	14,2
41	122,9 [4.839]	129,3 [5.091]	117,0 [4.606]	112,25 [4.419]	117,60 [4.630]	112,05 [4.411]	16
47	138,2 [5.441]	144,6 [5.693]	132,3 [5.209]	127,50 [5.020]	132,90 [5.232]	127,30 [5.012]	17,8

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

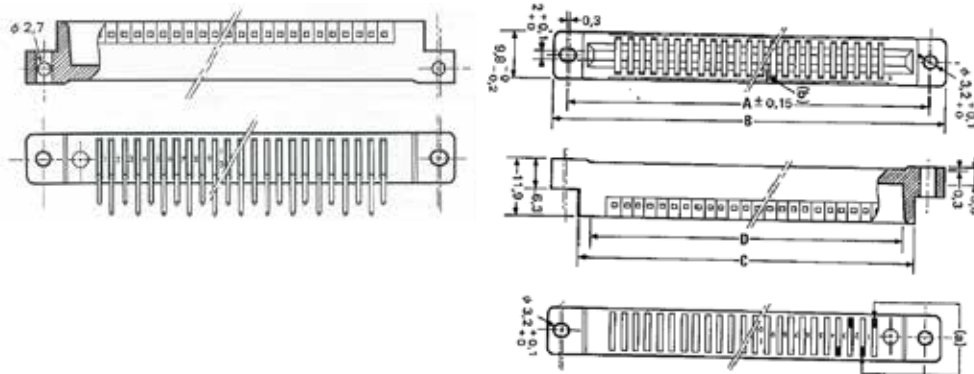
## 254 / HE701 &gt;&gt;&gt; TYPICAL ARRANGEMENTS

## FEMALE EXTENDER RECEPTACLES TYPE B

Equipped with right angle PC tails (YC01)



## External dimensions



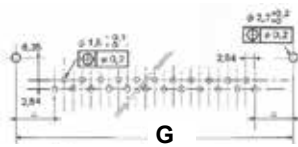
\*\* : number of contacts

- (a) : position of contact termination
- (b) : identification of every 10th contact on mating side
- Housing identical to receptacles type B, with transverse drilling of end feet for board mounting

Part number

254 \*\* BF YC01

## Extender board layout

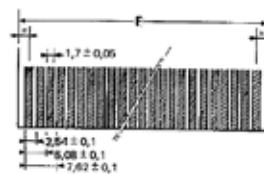


- Female receptacle equipped with right angle PC tails (YC01)
- Contact #1 is given for reference

Part number

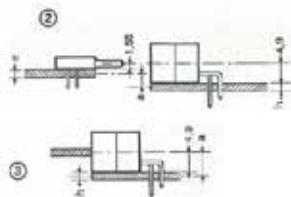
254 \*\* BF YC01

## Daughterboard layout (for direct connection only)



- Direct connection is made by a female receptacle directly mated with a  $1,6 \pm 0,2$  [ $0,063 \pm .008$ ] printed circuit board
- Daughterboard cut outs

## Extender board offset



- The axis of the board soldered to the extender is offset with respect to the connecting board by a:
- Indirect insertion (2)  $a = 3,35 + h/2 - e/2$
- Direct insertion (3)  $a = 4,9 + h/2$
- $h$ : thickness of the board soldered to the extender
- $e$ : thickness of the board soldered to the plug

Number of contacts	A	B ± 0.3 [± .012]	C ± 0.3 [± .012]	D <sup>+0.15</sup> / <sub>-0.1</sub>	E <sub>MIN</sub>	F ± 0.1 [± .004]	G	Housing weight (g)
17	62,0 [2.441]	68,4 [2.693]	56,1 [2.209]	51,30 [2.020]	56,60 [2.228]	51,10 [2.012]	62,0 [2.441]	8,7
23	77,2 [3.039]	83,6 [3.291]	71,3 [2.807]	66,55 [2.620]	71,90 [2.831]	66,35 [2.612]	77,2 [3.039]	10,5
25	82,3 [3.241]	88,7 [3.492]	76,4 [3.008]	71,62 [2.820]	77,00 [3.031]	71,42 [2.812]	82,3 [3.241]	11,2
29	92,5 [3.642]	98,9 [3.894]	86,6 [3.409]	81,80 [3.220]	87,10 [3.429]	81,60 [3.213]	92,5 [3.642]	12,3
35	107,7 [4.240]	114,1 [4.492]	101,8 [4.008]	97,00 [3.819]	102,40 [4.031]	96,80 [3.811]	107,7 [4.240]	14,2
41	122,9 [4.839]	129,3 [5.091]	117,0 [4.606]	112,25 [4.419]	117,60 [4.630]	112,05 [4.411]	122,9 [4.839]	16
47	138,2 [5.441]	144,6 [5.693]	132,3 [5.209]	127,50 [5.020]	132,90 [5.232]	127,30 [5.012]	138,2 [5.441]	17,8

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



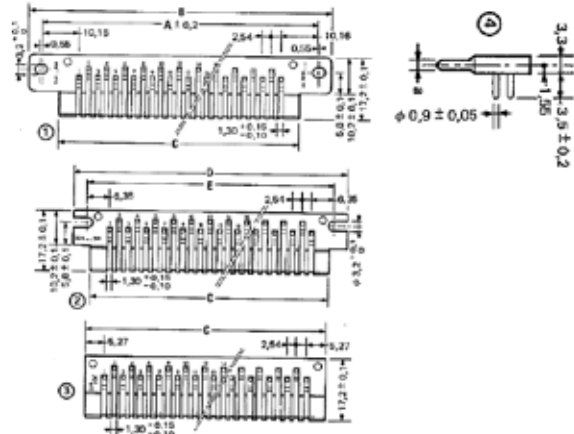
## 254 / HE701 >>> TYPICAL ARRANGEMENTS

### MALE PLUGS TYPE A, B OR C

Equipped with right angle PC tails



#### External dimensions

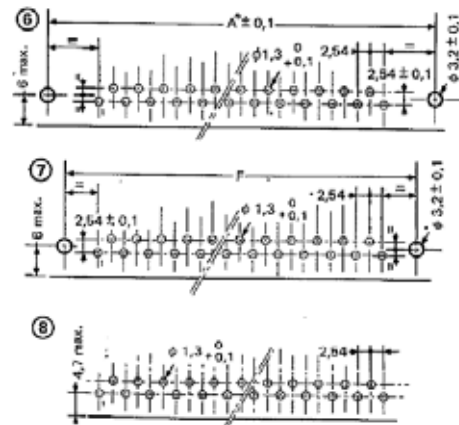


- \*\*: number of contacts
- (1): Plug type A
- (2): Plug type B
- (3): Plug type C
- (4): Plug type A, B or C
- (a): 1.9 [0.75] over the moulding  
1,6 ± 0,15 [0.063 ± .006] over the contacts

Part number

254 \*\* AM  
HE701 F \*\* Y  
254 \*\* BM  
254 \*\* CM

#### Daughter board layout

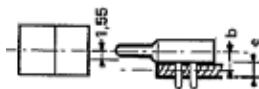


- \*\*: number of contacts
- (6): Plug type A
  - (dimension A): fixing hole centres as per NF C/UTE 93-421
  - As connector has oblong mounting holes, the fixing centres can be increased to  $A + 0,55 [0.022]$  to make the centres of the mounting holes and board holes coincide
- (7): Plug type B
- (8): Plug type C
- The positional tolerance of the holes is 0,1 [0.004] from the theoretical position
- The board is shown from the connector side. Contact #1 is given for reference

Part number

254 \*\* AM  
HE701 F \*\* Y  
254 \*\* BM  
254 \*\* CM

#### Daughter board offset



- Offset between the axis of the receptacle and the daughterboard
- $b = 1,55 + e/2$
- $b$ : offset between axes
- $e$ : board thickness

Number of contacts	A	B ± 0.3 [± .012]	C <sup>0</sup> <sub>-0.3</sub>	D ± 0.3 [± .012]	E ± 0.2 [± .008]	F ± 0.1 [± .004]	Weight (g)	
							A or B	C
11	45,7 [1.799]	53,1 [2.091]	35,95 [1.415]	45,5 [1.791]	38,1 [1.500]	38,6 [1.520]	4	3
17	61 [2.402]	68,4 [2.693]	51,20 [2.016]	60,7 [2.390]	53,3 [2.098]	53,8 [2.118]	5	4
23	76,2 [3.000]	83,6 [3.291]	66,42 [2.615]	76 [2.992]	68,6 [2.701]	69,1 [2.720]	6	5
25	81,3 [3.201]	88,7 [3.492]	71,50 [2.815]	81,1 [3.193]	73,7 [2.902]	74,2 [2.921]	7	6
29	91,5 [3.602]	98,9 [3.894]	81,70 [3.216]	91,2 [3.591]	83,8 [3.299]	84,3 [3.319]	8	7
35	106,7 [4.201]	114,1 [4.492]	96,90 [3.815]	106,5 [4.193]	99,1 [3.902]	99,6 [3.921]	9	8
41	121,9 [4.799]	129,3 [5.091]	112,15 [4.415]	121,7 [4.791]	114,3 [4.500]	114,8 [4.520]	10	9
47	137,2 [5.402]	144,6 [5.693]	127,40 [5.016]	136,9 [5.390]	129,5 [5.098]	130 [5.118]	12	11

## 254 / HE701 >>> POLARIZATION

### FOR DIRECT CONNECTION

Direct connection is made by a female receptacle directly mated with a  $1,6 \pm 0,2$  [ $.063 \pm .008$ ] printed circuit board

#### Polarizing key for female receptacle type A

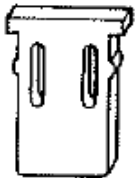


- A contact is replaced by a metal key with a corresponding cut out of the printed board
- Width of key:  $0,6 \pm 0,03$  [ $.024 \pm .001$ ]

Part number

038366

#### Polarizing key for female receptacle type B



- A contact is replaced by a metal key with a corresponding cut out of the printed board
- Width of key:  $0,7 \begin{smallmatrix} +0,15 \\ -0,1 \end{smallmatrix}$  [ $.028 \begin{smallmatrix} +.002 \\ -.008 \end{smallmatrix}$ ]

Part number

042572

### FOR INDIRECT CONNECTION

Indirect connection is made by a female receptacle mated with a male plug -two-part connectors)

#### Polarizing key for male plug / short contact\*

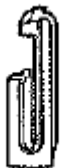


- The polarizing keys are fitted to the male connector
  1. Remove a contact and replace it by the polarizing key
  2. Check that the polarizing key is correctly positioned and pinch it to retain it
  3. Remove the corresponding female contact from the receptacle
- Black colour

Part number

037742

#### Polarizing key for male plug / short contact\*



- The polarizing keys are fitted to the male connector
  1. Remove a contact and replace it by the polarizing key
  2. Check that the polarizing key is correctly positioned and pinch it to retain it
  3. Remove the corresponding female contact from the receptacle
- White colour

Part number

041235

\* Never mount a long polarizing key in place of a short contact and vice versa

## 254 / HE701 >>> 508 SERIES

### 508 SERIES

Connectors are made from the same mouldings and contacts as 254 series.  
Only odd-numbered contacts are mounted



### 508 SERIES – 254 SERIES CORRESPONDING CONNECTOR

Number of contacts series 508 connector		Number of contacts in the corresponding connector of series 254
Odd contact mounted	Even contacts mounted	
6*	5*	11*
9	8	17
13	12	25
15	14	29
18	17	35
21	20	41
24	23	47

\*\* : number of contacts  
\* : type of contacts (Z or Y)

Part number

508 \*\* AF\*  
508 \*\* BF\*  
508 \*\* AM  
508 \*\* BM  
508 \*\* CM

\* These connectors cannot be supplied in BF version

## 254 / HE701 >>> TOOLING

### REMOVAL TOOLS

Contact removal tool for receptacle type B



Part number

641









# ABOUT AMPHENOL

Founded in 1932, **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, interconnect systems, and coaxial and specialty cables.

**Amphenol** has a diversified presence as a leader in high growth areas of the interconnect industry and provides solutions for customers in the automotive, broadband, industrial, information technology and data communications, military and aerospace, mobile devices, and mobile networks markets.

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Designed by Amphenol Socapex  
DOC-000089-ANG - January 2024