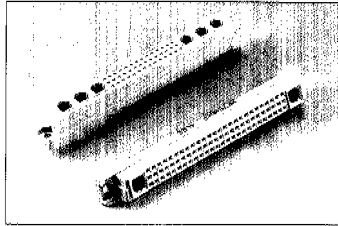


# Apfel DIN41612 Connectors

**APFEL**

**2.0MM HARD METRIC CONNECTORS**

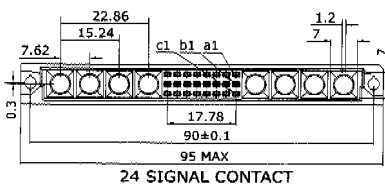
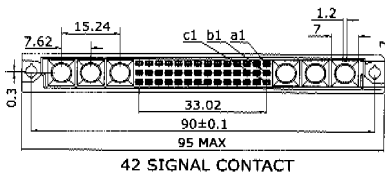
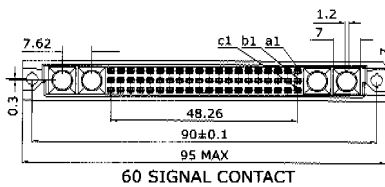
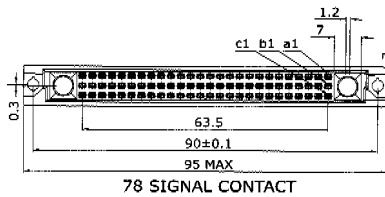
**Vertical Female Type M Press-Fit Connectors**



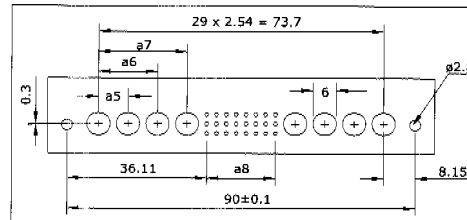
**Option:**

- Coded connectors
- Variations
- Please refer to page 33 for complete part number coding.
- Other variations, please consult factory.

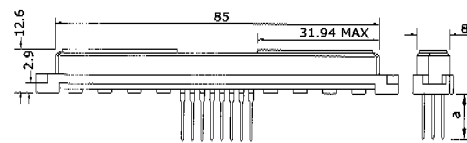
**Dimensions**



**Recommended P.C.B. layout**



NO. OF POSITIONS	a7	a6	a5	a8
78				25X2.54
60			3X2.54	19X2.54
42		6X2.54	3X2.54	13X2.54
24	9X2.54	6X2.54	3X2.54	7X2.54



	P	PWAA	PWAB	PWBA	PWBB
a=	5	13	13	17	17
K=		0.64x0.64	0.6x0.6	0.64x0.64	0.6x0.6

For Part Numbers – see next page

**Westfield Distribution Ltd**

(E&OE)

TEL: +44(0)1488 685183

E-mail: [sales@westfielduk.com](mailto:sales@westfielduk.com)

FAX: +44(0)1488 685430

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# Apfel DIN41612 Connectors

## 2.0MM HARD METRIC CONNECTORS

# APFEL

### Vertical Female Type M Press-Fit Connectors

#### Ordering Information

Number of contacts	Rows/Positions with Contact	Class3			Class2			Pitch
		5.0mm	13mm Wrap post	17mm Wrap post	5.0mm	13mm	17mm	
78	a+b+c	MF78abc P	MF78abc PWAA MF78abc PWAB	MF78abc PWBA MF78abc PWBB	MF78abc P-2	MF78abc PWAA-2 MF78abc PWAB-2	MF78abc PWBA-2 MF78abc PWBB-2	2.54mm
60	a+b+c	MF60ac P	MF60ac PWAA MF60ac PWAB	MF60ac PWBA MF60ac PWBB	MF60ac P-2	MF60ac PWAA-2 MF60ac PWAB-2	MF60ac PWBA-2 MF60ac PWBB-2	
42	a+b+c	MF42ac P	MF42ac PWAA MF42ac PWAB	MF42ac PWBA MF42ac PWBB	MF42ac P-2	MF42ac PWAA-2 MF42ac PWAB-2	MF42ac PWBA-2 MF42ac PWBB-2	5.08mm half-loaded
24	a+b+c	MF24abc P	MF24abc PWAA MF24abc PWAB	MF24abc PWBA MF24abc PWBB	MF24abc P-2	MF24abc PWAA-2 MF24abc PWAB-2	MF24abc PWBA-2 MF24abc PWBB-2	

#### Remarks:

P—Straight press-fit 5.0mm tail length  
 PWAB, PWAA—Straight press-fit 13mm tail length

PWBB, PWBA—Straight press-fit 17mm tail length  
 K—Cross section of wrap post (Thickness x Width)

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(E&OE)

TEL: +44(0)1488 685183      E-mail: [sales@westfielduk.com](mailto:sales@westfielduk.com)      FAX: +44(0)1488 685430

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# Apfel DIN41612 Connectors

## APFEL

## FEATURES OF DIN 41612 EUROCARD

### Two-piece printed circuit connectors

#### ■ Indirect connectors

It can eliminate the problems of board warpage, different board thickness

#### ■ High density

96 contacts in 2.54mm grid are available in a compact body.

#### ■ High reliability

Dual beam metal-to-metal contact polarized connectors for all series to prevent mismatching.

This connectors are versatiliely used in telecommunications, instruments, computers, control system ect.

#### • General specifications:

**Number of contacts:** 16,24,32,48,64,96

**Contact spacing:** 2.54mm(0.1"),5.08mm(0.2" half-loaded)

#### Material

**Insulator:** Glass filled polyester (PBT, UL flammability 94V-0)

**Contacts:** Female copper alloy, male brass

**Contact finish:** Contact area: gold over nickel (per requirements of performance class 3, class 2)

**Termination area:** TIN-plated or gold-plated for long wrap post

#### Mechanical

##### Insertion force:

96 contacts max 90N

64 contacts max 60N

48 contacts max 45N

32 contacts max 30N

16 contacts max 15N

Withdrawl force per contact: min 0.15N

Temperature range:-55°C to +125°C

Air and creepage distance 1.2mm min

#### Electrical

##### Current rating:

20°C 2A

70°C 1A

100°C 0.5A

**Contact resistance:**  $\leq 20m\Omega$

(testing current 100mA)  $\leq 40m\Omega$  after 400 mating cycles

**Capactance between adjacent contacts:** Appr.2PF

**Insulation resistance:**  $\geq 10^{12}\Omega$  (between adjacent cotacts at 100VDC)

**Test voltage:** 1,000Vrms between contacts (2.54mm spacing)

1,550Vrms between contacts (5.08mm spacing)

1,550Vrms between contacts and body

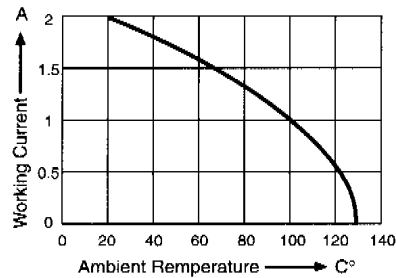
**Operating voltage:** 250V AC

• Specifications are subject to change without prior notice.

• All dimensions are in mm (milli meter)

#### Agency Approval

• U/L File E149341,Electric rating:250V, 2A



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# Apfel DIN41612 Connectors

**APFEL**

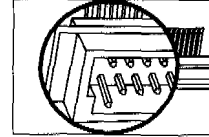
**DIN 41612 EUROCARD CONNECTORS**

**OPTIONS:**

**-X**

**EXTENDED MALE CONNECTORS  
—EARLY MAKE/LATE BREAK**

APFEL provides the early make /late break extended male contacts connectors. Before entering order, please advise the positions of extended male contacts of Row a, Row b, Row c and request for correct P/N coding for this variation. Please refer to page 33 for complete part number coding. E.G. CM96abc R-X1(contact positions, a1.b1.c1.a32.b32.c32, with extended longer contact.)



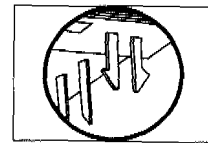
**-MC**

**CONNECTORS WITH PRE-INSTALLED  
SNAP-IN MOUNTING CLIPS**

The mounting clips are designed for use with 1.6mm (0.062")P.C.B. thickness. The material of mounting clips is copper alloy and it is Tin plated.

All solder connectors can be ordered with this feature.

Please refer to page 33 for the complete part number coding. E.G. CM 64ac R-MC1, CF64ac T-MC2.



**-C**

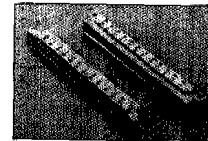
**WITHOUT LOSS OF CONTACTS  
CODING SYSTEM**

APPEL provides coded connectors for type B.C.Q.R.M.

The coded connectors are with following advantages

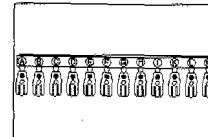
- Without loss of contact
- No need to break off the plastic housing, no tools are required.
- Manually keying, keying can be changed and corrected easily.

E.G. CM64ac R-C



**KEYING COMB SET**

Each comb set includes 12keys, please order separately. Ordering part number for this plastic comb set is CS12



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# Apfel DIN41612 Connectors

## DIN 41612 EUROCARD CONNECTORS

**APFEL**

### PRESS-FIT TERMINATION CONNECTORS

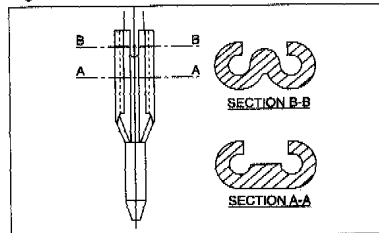
APFEL provides the unique patented compliant twin-eye of the needle press-in terminations.

It owns the following advantages:

- Tapered entry.
- Gas tight and larger contact area with the wall of the plated through hole.
- Conform to the hole variance.

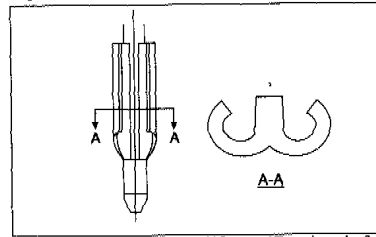
### PATENTED CONSTRUCTION

Fig 1



Construction of female short press-fit contact  
5mm tail length

Fig 2



Construction of long post (13mm, 17mm) male &  
female connectors, male press-fit 5mm tail length

Diameter of P.C.B plated through hole:  
P.C. board thickness:  
Recommended P.C. board holes:  
Copper plating:  
Tin plating:  
Push-in force per pin for plated through hole:  
Push-out force per pin for plated through hole:

$\varnothing=0.94-1.09\text{mm}(0.037-0.43\text{inch})$   
 $\geq 1.6\text{mm}(0.062\text{inch})$   
hole  $1.15^{\pm 0.02}\text{mm}(0.0453^{\pm 0.0008}\text{inch})$   
25-50 $\mu\text{m}$ (0.001 inch min.)  
5-15 $\mu\text{m}$ (0.002 inch min.)  
max 8kg/pin (17.5 lbs/pin)  
min. 3.5kg/pin(7.5lbs/pin)

Fig 3



Cross section of an assembled P.C. Board.

Fig 4



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# Apfel DIN41612 Connectors

## PRESS-FIT TOOLING

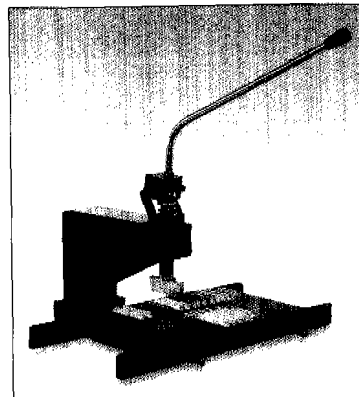
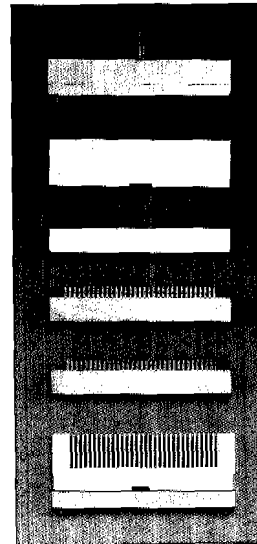
**APFEL**

**DIN 41612 EUROCARD CONNECTORS**

**HAND-ACTUATED PRESS-FIT EQUIPMENT**

**THE MOST EASY WAY TO PRESS IN PRESS-FIT CONNECTOR**

1. Hand bench press  
Working stroke: approx. 25mm  
Press force: approx. 15KN  
Hole  $\phi$  in the RAM: 10mm  
Weight: approx. 30kg  
Adjustable distance for stroke: approx. 25mm
2. Guide frame  
adjustable guide for P.C.board  
max: 330mm X 600mm (min P.C.B. width 100mm)  
Part No. for item 1, and item 2, in one set is HPE01
3. Mounting tool P/N: MT01  
This tool is to be fastened to the 10mm RAM of hand bench press.
4. Alignment tool P/N: AT01  
This tool is to make alignment for mounting tool and bottom tool.
5. Female top tool P/N: FTT01  
This tool is to be mounted with mounting tool for press-in female connectors.
6. Male top tool  
For RM type, P/N: TL-03  
For QM type, P/N: TL-02  
For 1/2 RM type, P/N: TS-03  
For 1/2 QM type, P/N: TS-02
7. Bottom tool P/N: BT-01  
This tool is to be mounted on the base of guide frame.



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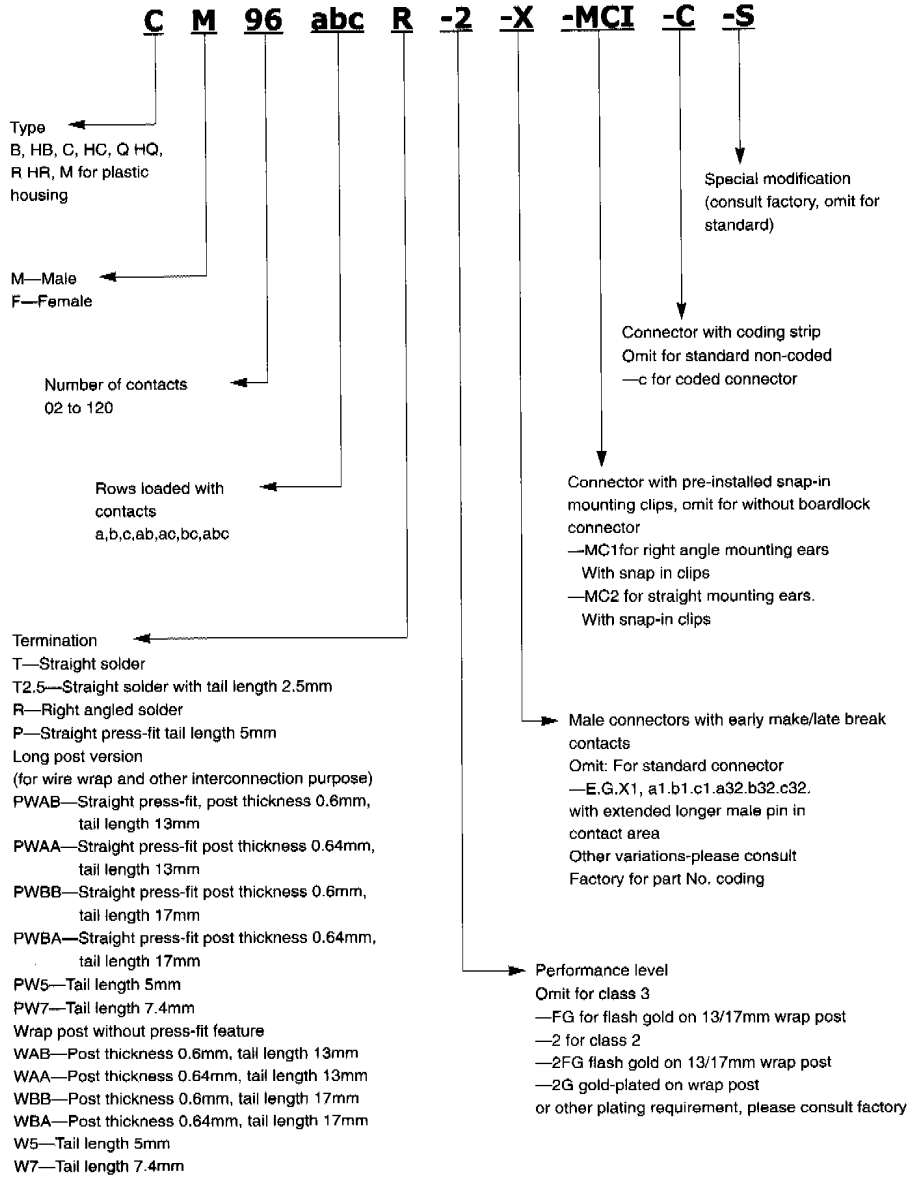
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# Apfel DIN41612 Connectors

## DIN 41612 EUROCARD CONNECTORS

# APFEL

### How to Order



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(E&OE)

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