

APFEL – 2.0mm Hard Metric CONNECTORS



Westfield Distribution Ltd

(E&OE)

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APFEL – 2.0mm HARD METRIC CONNECTORS

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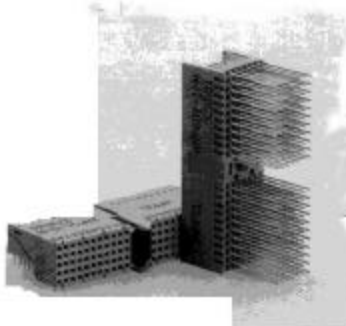
APFEL – 2.0mm HARD METRIC CONNECTORS

APFEL 2.0mm Hard Metric Connector Series

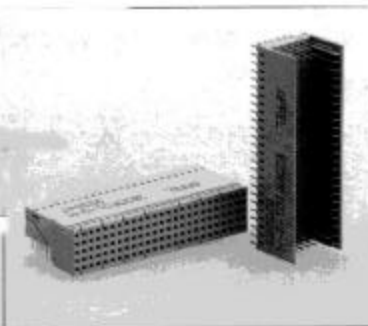
Overview

Apfel 2.0mm HARD METRIC CONNECTOR MODULES comply with international IEC 917 and IEC 61076-4-101 standards. The connector system is designed and manufactured to meet the emerging trend of higher density and faster signal transmission in the electronic industries and ideal for application in the telecommunication, industrial PC.

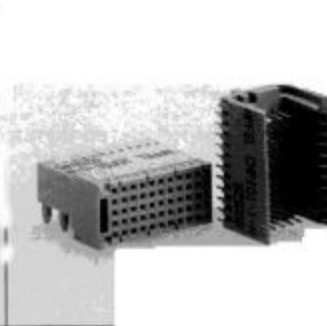
Type A Connectors



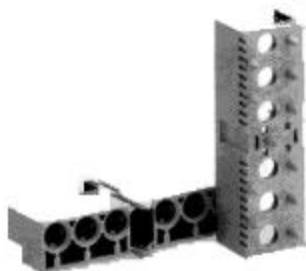
Type B Connectors



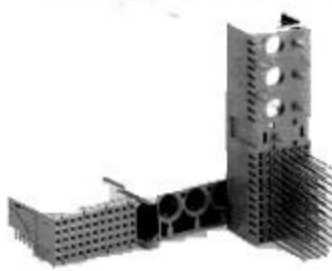
Type C Connectors



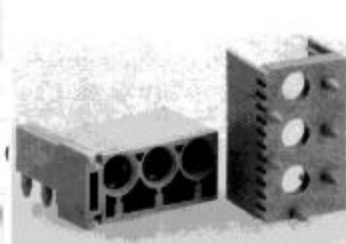
Type L Connectors



Type M Connectors



Type N Connectors



Shrouds



Coding keys



Shielding Covers



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Features and Specifications:

The two-pieces connector modules are in basic 2.0mm grid.

- The full series is with the press-fit compliant termination.
- Inverse mating configuration.
- This high density connector modules can be stacked end to end without loss of space.
- It provides 3 mating levels and the difference between two levels is 1.5mm.
- The min. wiping length is 2.5mm.
- The international standard coding system (MPC) which is stipulated in the IEC61076-4-101.
- Shielding and grounding
- 2 outer rows (row z and f) of male modules are to engage with the shielding plates of female modules.
- The recommended plated through hole 0.6+/- 0.05mm for the press-fitting.
- The 2.0 hard metric connector series is ideal for the application of subnano seconds signal risetime
- Apfel developed the 2.0mm series under thorough consideration of impedance match, propagation delay, cross talk, reflection. It is the ideal connector for digital high speed data application.
- Compliant press-fit design for all male and female connectors.
- End to end stackable, pins are in 2.0mm grid, real estate saving.
- 5 signal rows plus 2 outer rows for shieldings.
- Male connectors with 3 different contact levels.
- Min. contact range of 2.5mm for shortest pins.
- Coding system prevents mix-up and wrong mating between male and female connectors.
- The 2.0mm hard metric connectors and DIN 41612 connectors can be used on the same PC board as both have the same mating distance.
- Pin and socket interconnect mechanism.
- Coding mechanism providing positive keying
- Staggered make-break pin populations for optional hot-swap capability.
- Rear pin option for through-the-backplane I/O application.
- High density PCI capability.
- Shield for EMI/RFI protection.
- Expandability for end user application.

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Mechanical and Electrical Characteristics

Mechanical Specifications

Grid Size	2.0 mm
Operating Temperature	-55 C to + 125 C
Insulation Material	Glass filled Polyester, UL 94V-0
Contact Material	Phosphor Bronze
Air and Creepage Distance	Male 0.8mm, Female 0.6mm
Contact Levels	5.3mm - Level 1 6.8mm - Level 2 8.3mm - Level 3
Mating Force per Signal Contact	N X 0.75N Max.
Mating Force per Shield Contact	N X 1N Max.
Withdrawal Force	0.15N Min.
Termination Technique Misalignment	Compliant Press-Fit Longitudinal +/- 2.0mm Latitudinal +/- 2.5mm
Inclination	+/- 2 degree

Electrical Performance

Current Rating	1.5A at 20 C, 1.0A at 70 C
Test Voltage	750 Vrms
Contact Resistance	20mΩ Max.
Insulation Resistance	10 ⁴ MΩ Min.

Recommended P.C.B Plated Through Holes

Drilled Hole	ø 0.69–0.72mm
Cu	Min. 25 µm
Sn	5–15 µm
Plated Through Hole ø	0.55–0.65 mm

Please Note:- Specifications are subject to change without prior notice.

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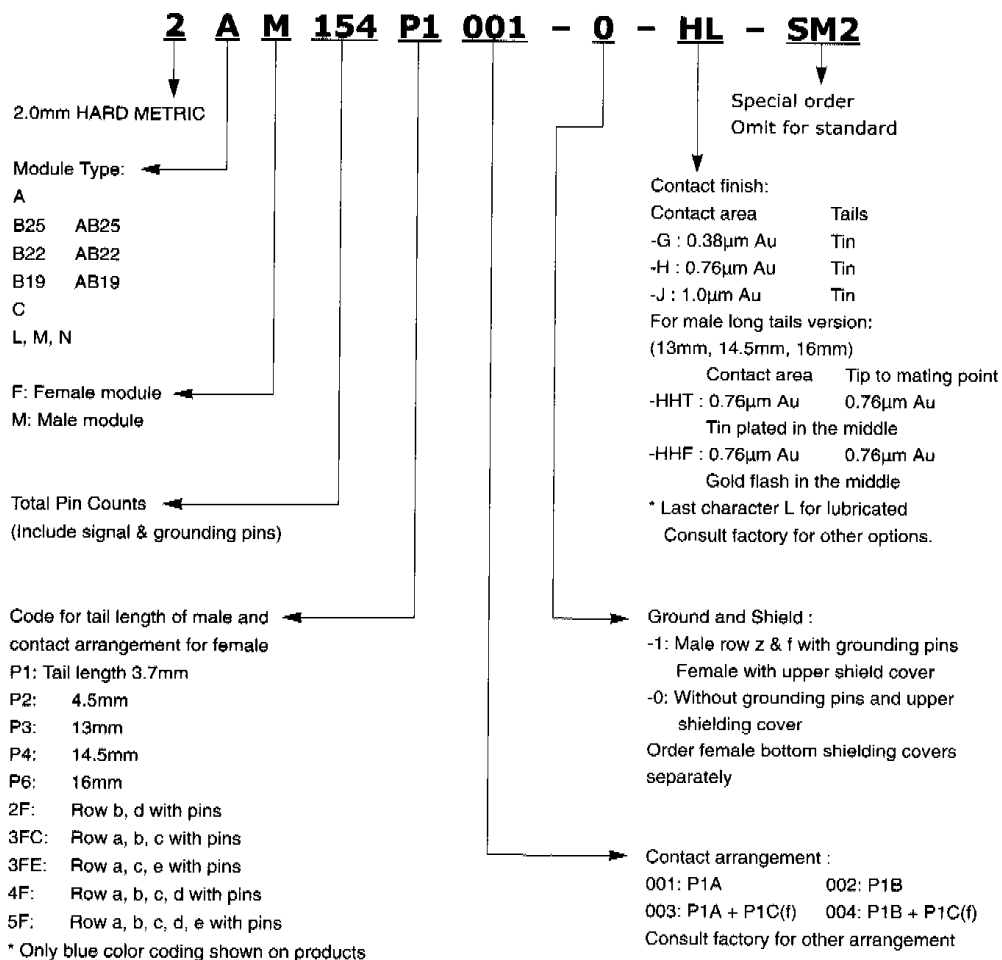
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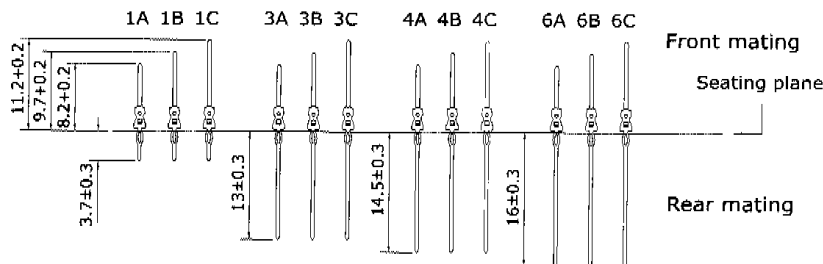
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Ordering Information



Male Contact Options



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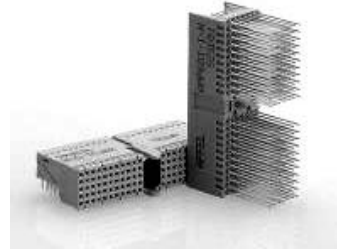
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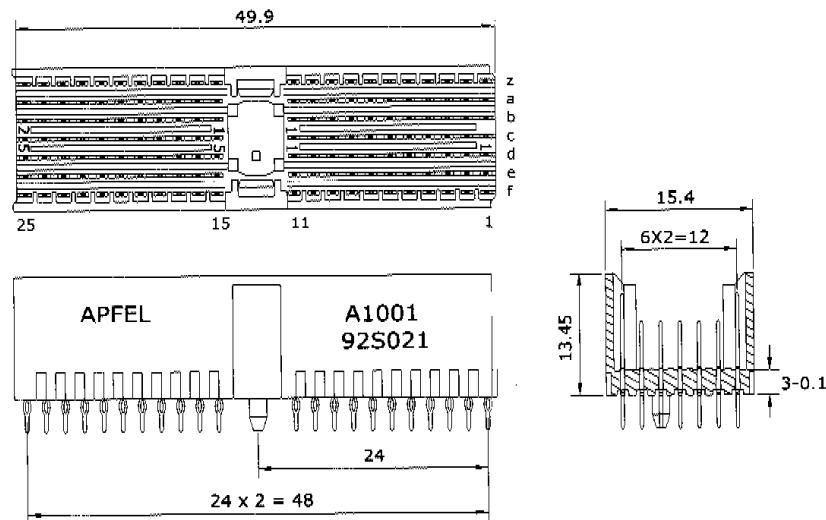
Vertical Male Type A Connectors for Fix Boards

(BACKPLANE CONNECTORS)

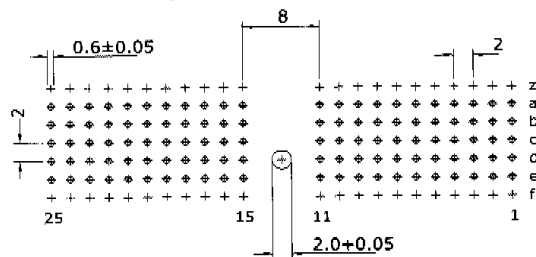
Type A Connectors provides 110 signal contacts plus 44 optional shielding contacts in 5+2 row X 25 position. The MPC(multipurpose center) provides alignment guides and accepts optional coding keys. Locating peg prevents a wrong assembly and gives an accurate position.



Dimensions



Recommended P.C.B. layout



Dimensions shown are for reference purpose only. All dimensions are in millimeters unless otherwise specified.

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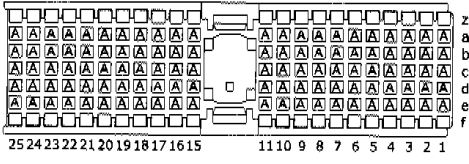
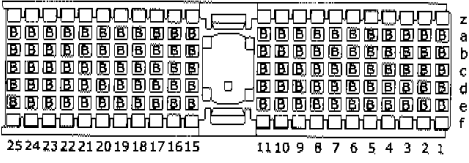
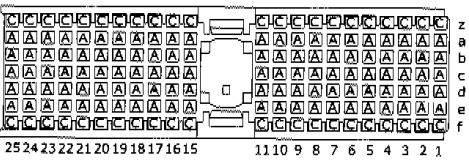
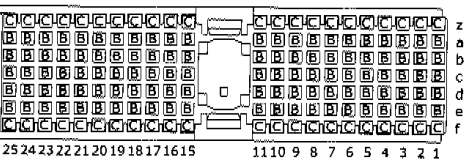
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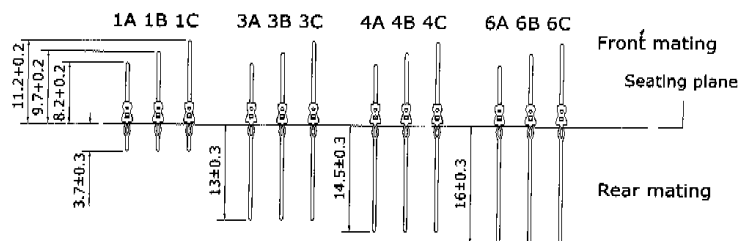
APFEL – 2.0mm HARD METRIC CONNECTORS

Vertical Male Type A Connectors for Fix Boards

Dimensions

Assembly Drawing	Total Number	Row	Type	Part Numbers
 <p>25 24 23 22 21 20 19 18 17 16 15 11 10 9 8 7 6 5 4 3 2 1</p>	110	z a b c d e f	- 1A 1A 1A 1A 1A -	2AM110P1001-0-H
 <p>25 24 23 22 21 20 19 18 17 16 15 11 10 9 8 7 6 5 4 3 2 1</p>	110	z a b c d e f	- 1B 1B 1B 1B 1B -	2AM110P1002-0-H
 <p>25 24 23 22 21 20 19 18 17 16 15 11 10 9 8 7 6 5 4 3 2 1</p>	154	z a b c d e f	1C 1A 1A 1A 1A 1A 1C	2AM154P1001-1-H
 <p>25 24 23 22 21 20 19 18 17 16 15 11 10 9 8 7 6 5 4 3 2 1</p>	154	z a b c d e f	1C 1B 1B 1B 1B 1B 1C	2AM154P1002-1-H

Male Contact Options



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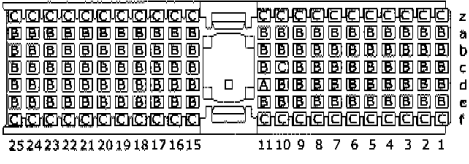
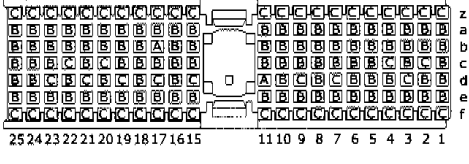
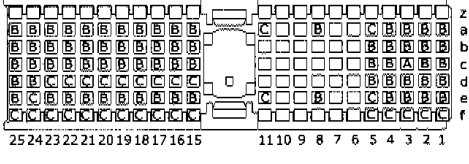
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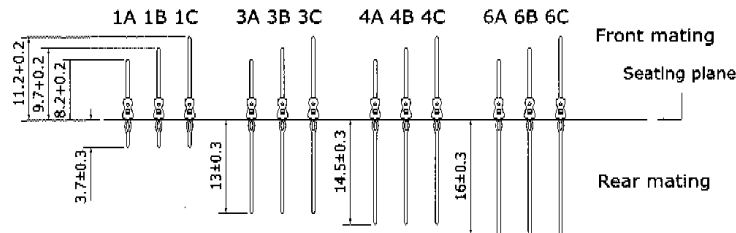
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Vertical Male Type A Connectors for Fix Boards

Dimensions

Assembly Drawing	Total Number	Row	Type	Part Numbers
Compact PCI 	154	z a b c d e f	1C 1B 1B 1B 1B 1B 1C	2AM154P1011-1-H
cPCI Hot Swap 	154	z a b c d e f	1C 1B * * * 1B 1C	2AM154P1012-1-H
cPCI Telephony Spec 	100	z a b c d e f	- * * * * * *	2AM100P1013-1-H

Male Contact Options



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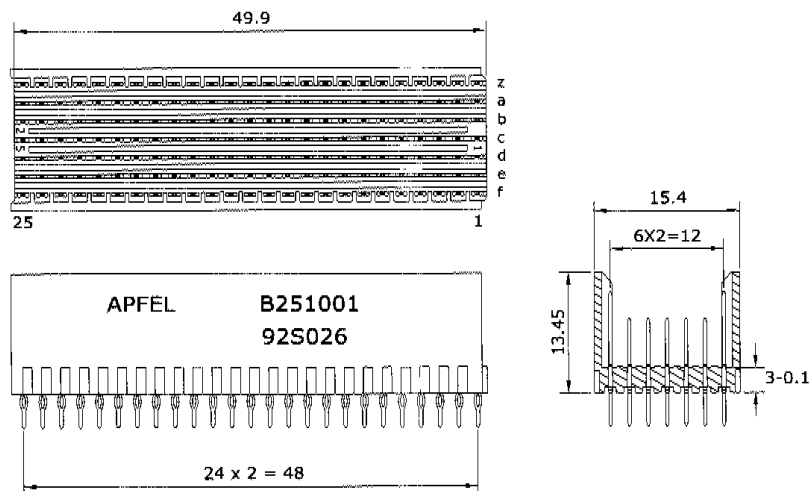
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Vertical Male Type B25 Connectors for Fix Boards

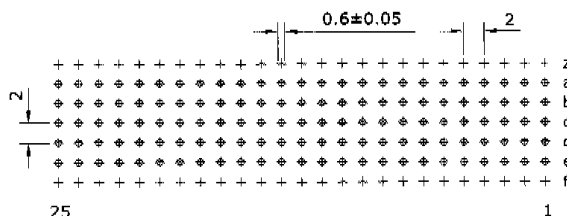
Type B vertical male connector provides signal contacts and optional shielding contacts respectively in 5 + 2 row X 25 position configuration. All are end to end stackable without change in contact pitch.



Dimensions



Recommended P.C.B. layout



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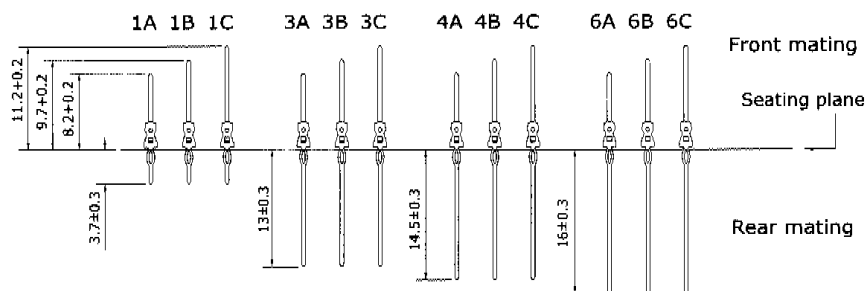
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Vertical Male Type B Connectors for Fix Boards

Dimensions

Assembly Drawing	Total Number	Row	Type	Part Numbers
	125	z a b c d e f	- 1A 1A 1A 1A 1A -	2B25M125P1001-0-H
	125	z a b c d e f	- 1B 1B 1B 1B 1B -	2B25M125P1002-0-H
	175	z a b c d e f	1C 1A 1A 1A 1A 1A 1C	2B25M175P1001-1-H
	175	z a b c d e f	1C 1B 1B 1B 1B 1B 1C	2B25M175P1002-1-H

Male Contact Options



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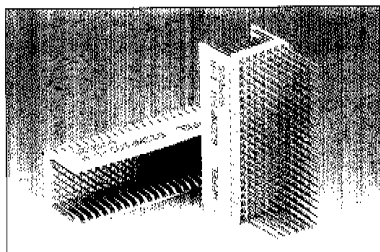
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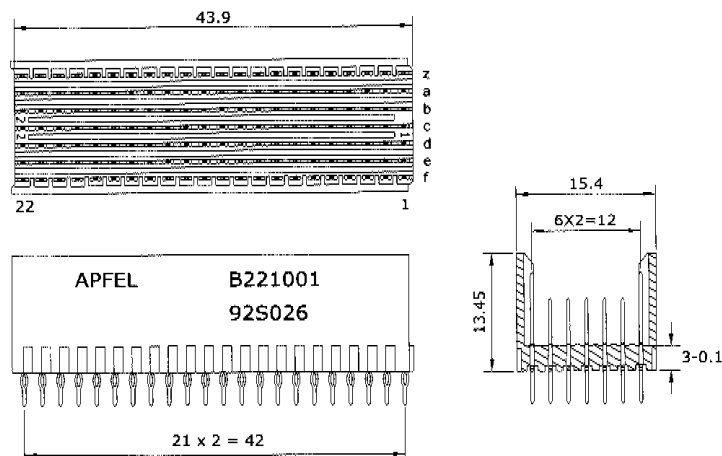
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Vertical Male Type B22 Connectors for Fix Boards

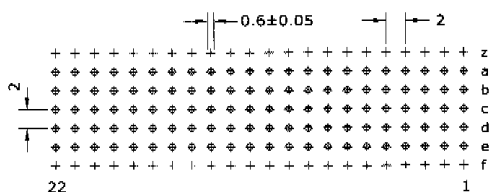


Type B vertical male connector provides signal contacts and optional shielding contacts respectively in 5 + 2 row X 22 position configuration. All are end to end stackable without change in contact pitch.

Dimensions



Recommended P.C.B. layout



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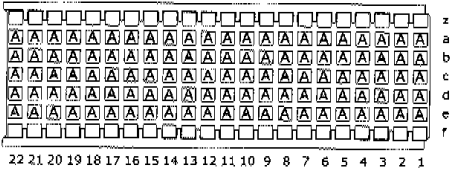
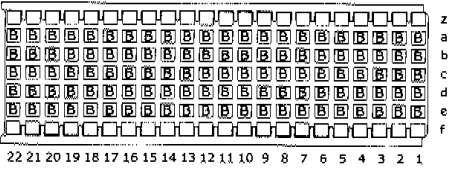
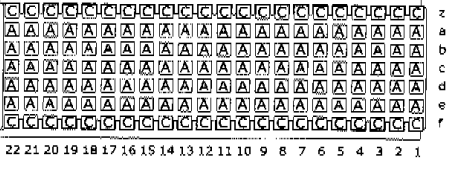
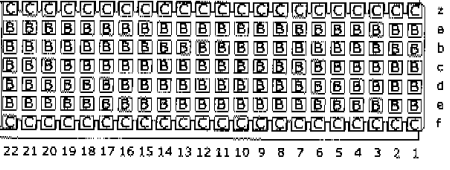
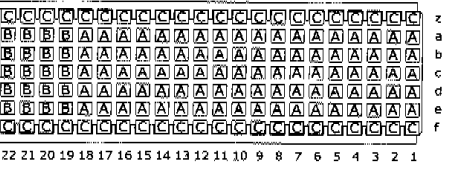
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Vertical Male Type B Connectors for Fix Boards

Dimensions

Assembly Drawing	Total Number	Row	Type	Part Numbers
	110	z a b c d e f	- 1A 1A 1A 1A 1A -	2B22M110P1001-0-H
	110	z a b c d e f	- 1B 1B 1B 1B 1B -	2B22M110P1002-0-H
	154	z a b c d e f	1C 1A 1A 1A 1A 1A 1C	2B22M154P1001-1-H
	154	z a b c d e f	1C 1B 1B 1B 1B 1B 1C	2B22M154P1002-1-H
cPCI Telephony Spec 	154	z a b c d e f	1C * * * * * 1C	2B22M154P1013-1-H

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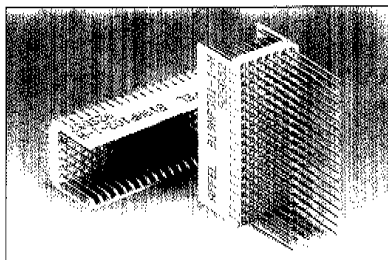
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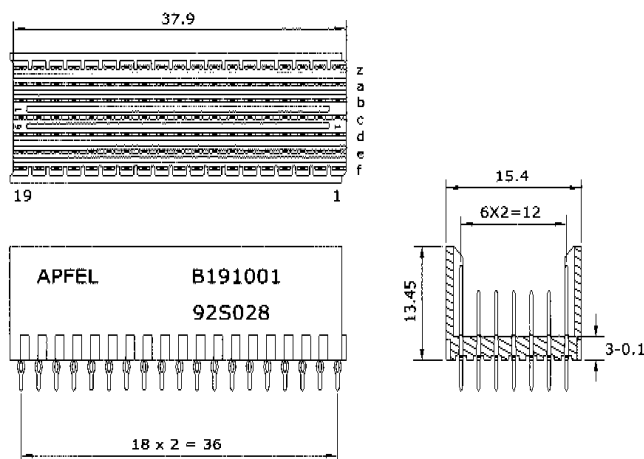
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Vertical Male Type B19 Connectors for Fix Boards

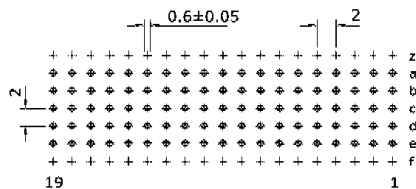


Type B vertical male connector provides 95 signal contacts and optional shielding contacts respectively in 5 + 2 row X 19 position configuration. All are end to end stackable without change in contact pitch.

Dimensions



Recommended P.C.B. layout



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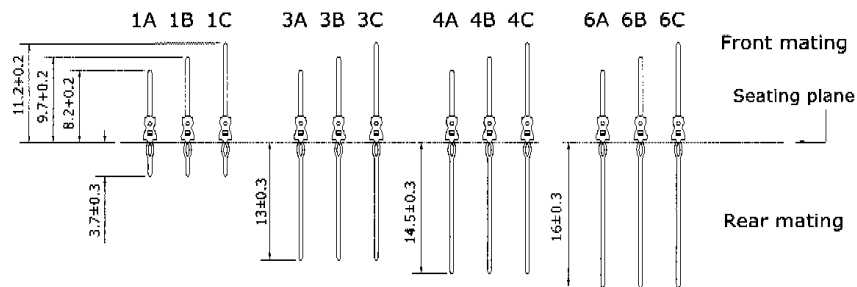
APFEL – 2.0mm HARD METRIC CONNECTORS

Vertical Male Type B Connectors for Fix Boards

Dimensions

Assembly Drawing	Total Number	Row	Type	Part Numbers
<p>cPCI Telephony Spec</p>	95	z a b c d e f	- 1A 1A 1A 1A 1A -	2B19M95P1001-0-H
	95	z a b c d e f	- 1B 1B 1B 1B 1B -	2B19M95P1002-0-H
	133	z a b c d e f	1C 1A 1A 1A 1A 1A 1C	2B19M133P1001-1-H
	133	z a b c d e f	1C 1B 1B 1B 1B 1B 1C	2B19M133P1002-1-H

Male Contact Options



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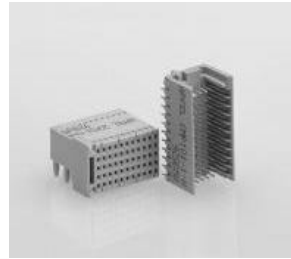
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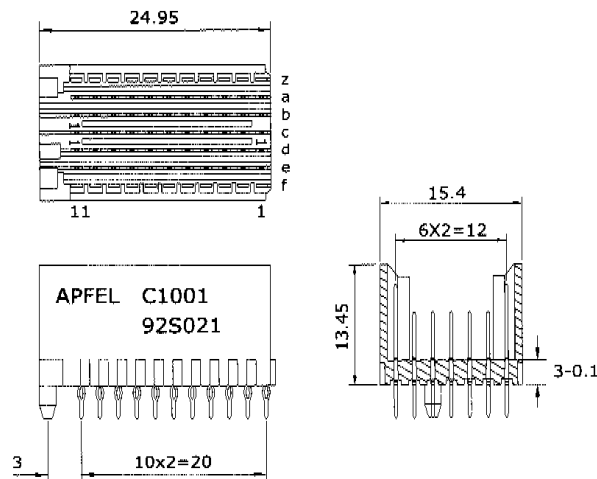
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Vertical Male Type C Connectors for Fix Boards

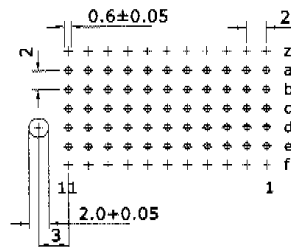
Type C vertical male connector provides 55 signal contacts and optional 22 shielding contacts in 5 + 2 row X 11 position. This half-size connector is polarized and the insulator features guides for alignment of the mating connectors.



Dimensions



Recommended P.C.B. layout



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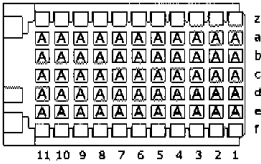
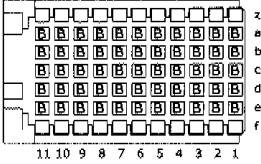
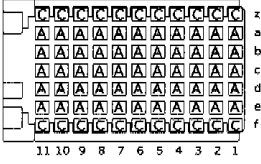
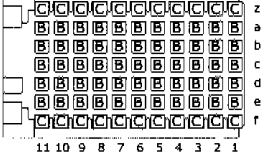
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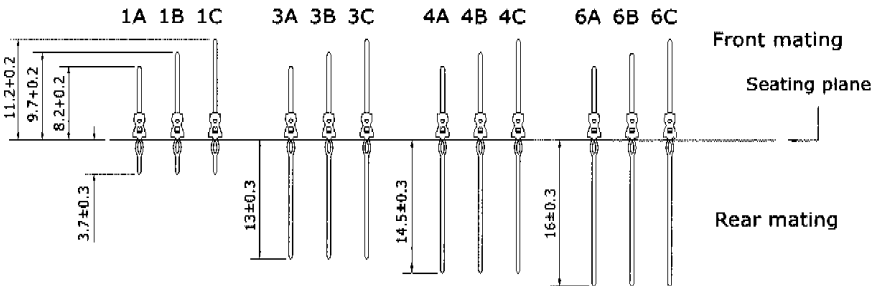
APFEL – 2.0mm HARD METRIC CONNECTORS

Vertical Male Type C Connectors for Fix Boards

Ordering Information

Assembly Drawing	Total Number	Row	Type	Part Numbers
	55	z a b c d e f	- 1A 1A 1A 1A 1A -	2CM55P1001-0-H
	55	z a b c d e f	- 1B 1B 1B 1B 1B -	2CM55P1002-0-H
	77	z a b c d e f	1C 1A 1A 1A 1A 1A 1C	2CM77P1001-1-H
	77	z a b c d e f	1C 1B 1B 1B 1B 1B 1C	2CM77P1002-1-H

Male Contact Options



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APFEL – 2.0mm HARD METRIC CONNECTORS

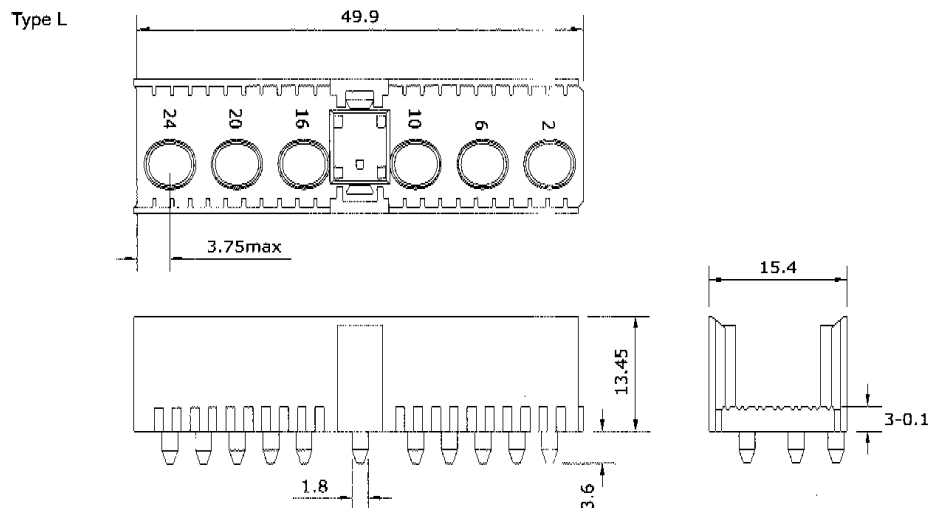
Vertical Male Type L/M/N Connectors for Fix Boards

These connectors have 3 or 6 cavities for high current, coaxial or fiber optic contacts. The MPC on type L and M provides alignment guides and accepts optional coding keys. The half-size type N also provides additional guidance when used on the end of a card slot.



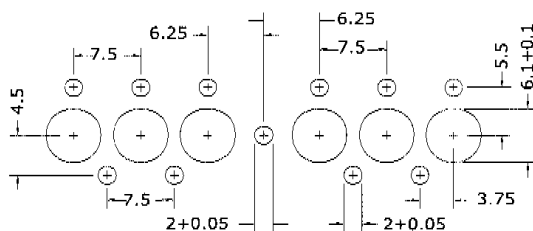
Type L

Dimensions



Recommended P.C.B. layout

Type L



Dimensions shown are for reference purpose only. All dimensions are in millimeters unless otherwise specified.

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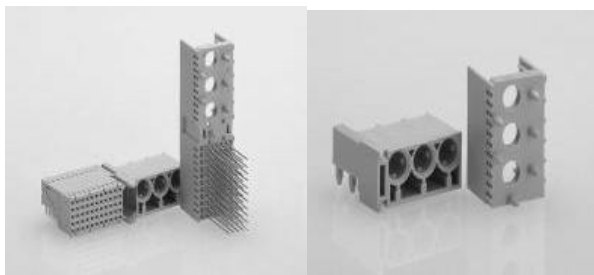
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APFEL – 2.0mm HARD METRIC CONNECTORS

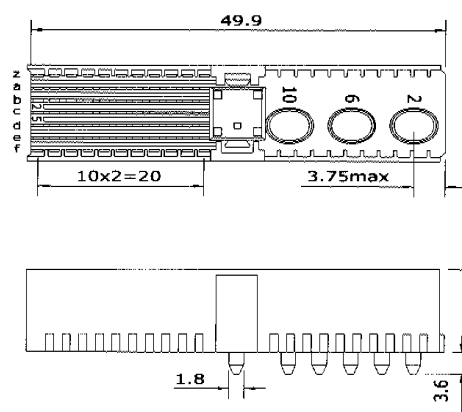


Type M

Type N

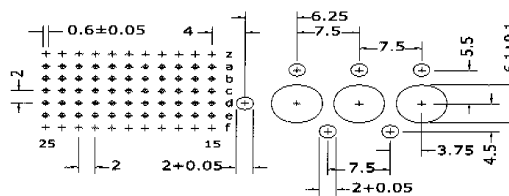
Dimensions

Type M



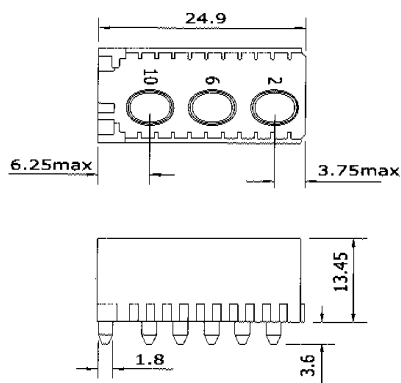
Recommended P.C.B. layout

Type M



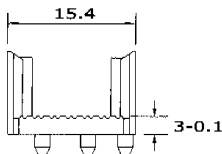
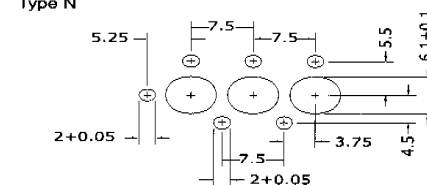
Dimensions

Type N



Recommended P.C.B. layout

Type N



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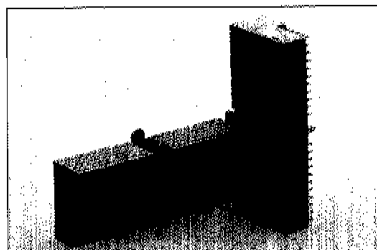
19

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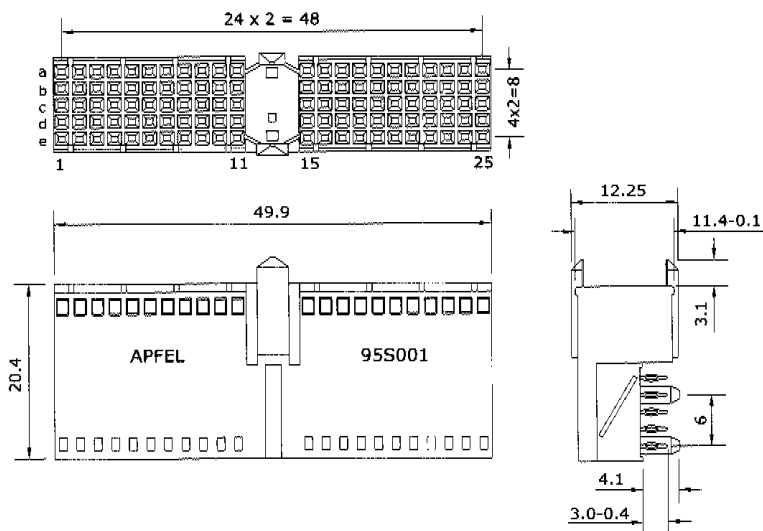
APFEL – 2.0mm HARD METRIC CONNECTORS

Right Angle Female Type A Connectors for Free Boards

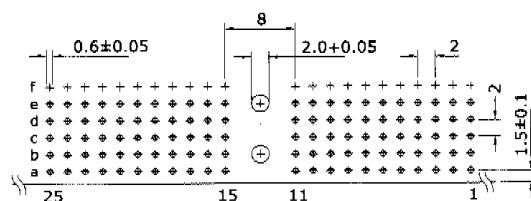


Type A right angle female connector provides 110 contacts in a 5 row X 25 position fully loaded configuration. The MPC provides alignment guide and accepts optional coding keys. Upper ground return shield is provided as option. This connector is used in the J1 and J4 position of the Compact PCI daughter board.

Dimensions



Recommended P.C.B. layout



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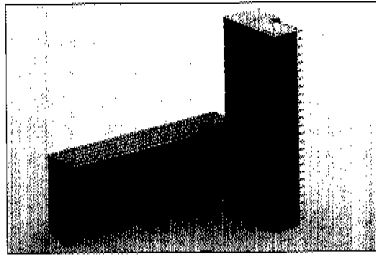
20

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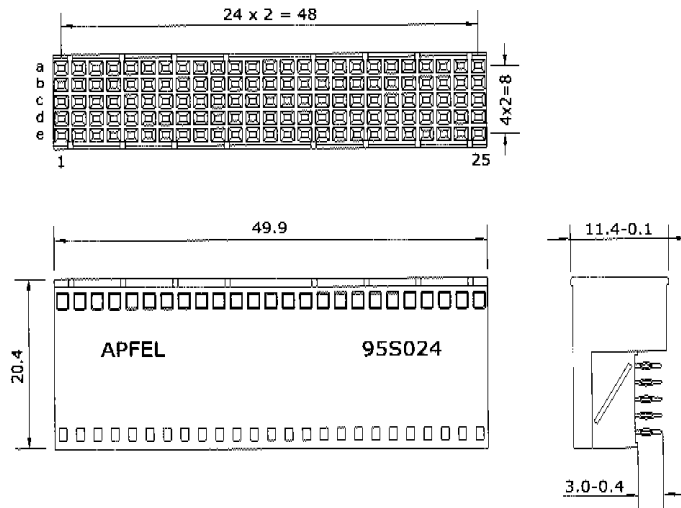
APFEL – 2.0mm HARD METRIC CONNECTORS

Right Angle Female Type B25 Connectors for Free Boards

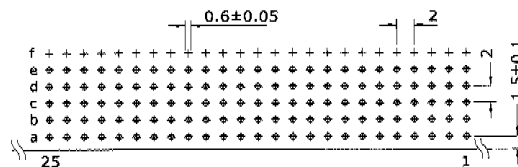


Right angle female type B connector provides 125 signal contacts in a 5 row X 25 position fully loaded configuration. Optional pre-assembled upper and lower ground return shields are also provided or could be ordered separately.

Dimensions



Recommended P.C.B. layout



Dimensions shown are for reference purpose only. All dimensions are in millimeters unless otherwise specified.

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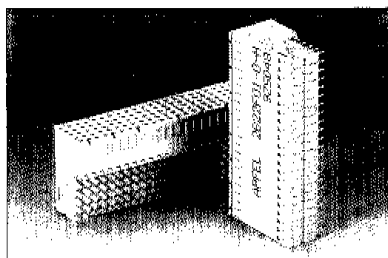
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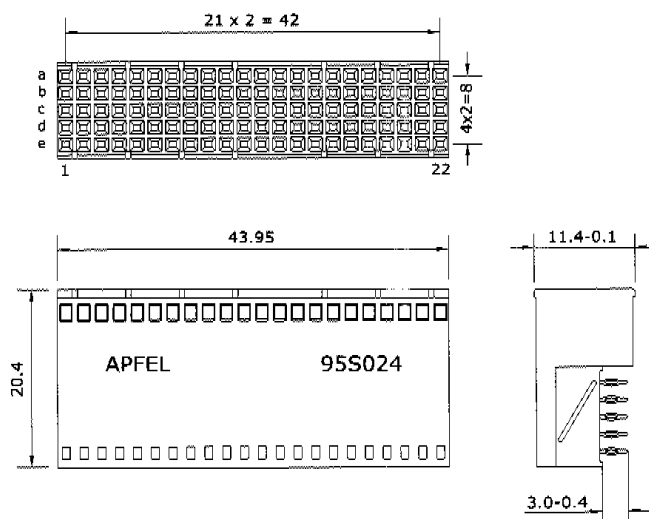
APFEL – 2.0mm HARD METRIC CONNECTORS

Right Angle Female Type B22 Connectors for Free Boards

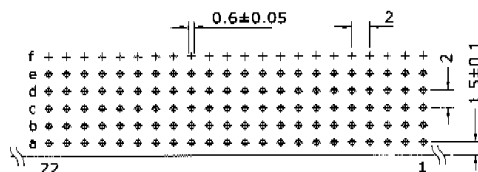


Right angle female type B connector provides 110 signal contacts in a 5 row X 22 position fully loaded configuration. Optional pre-assembled upper and lower ground return shields are also provided or could be ordered separately. The 22 position one is used in the J1 and J5 location of the Compact PCI daughter card.

Dimensions



Recommended P.C.B. layout



Dimensions shown are for reference purpose only. All dimensions are in millimeters unless otherwise specified.

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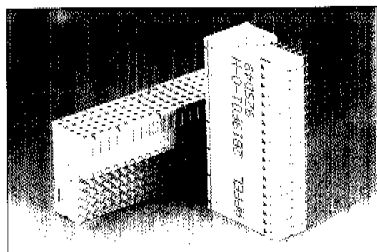
22

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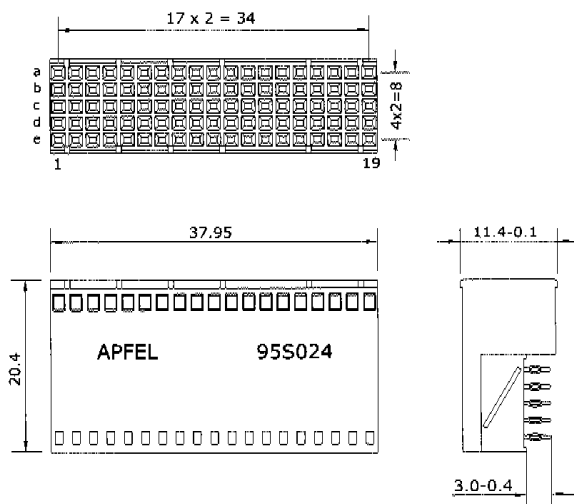
APFEL – 2.0mm HARD METRIC CONNECTORS

Right Angle Female Type B19 Connectors for Free Boards

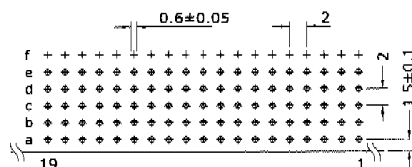


Right angle female type B connector provides 95 signal contacts in a 5 row X 19 position fully loaded configuration. Optional pre-assembled upper and lower ground return shields are also provided or could be ordered separately. The 19 position one is used in the J3 location of the compact PCI daughter card.

Dimensions



Recommended P.C.B. layout



Dimensions shown are for reference purpose only. All dimensions are in millimeters unless otherwise specified.

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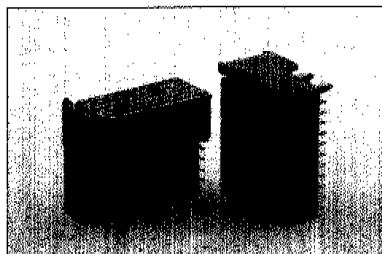
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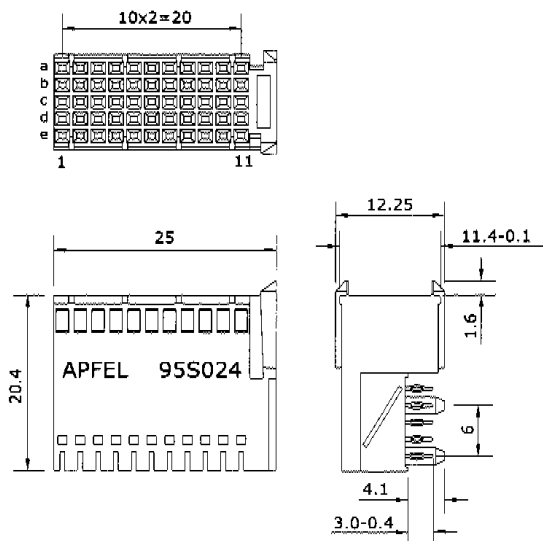
APFEL – 2.0mm HARD METRIC CONNECTORS

Right Angle Female Type C Connectors for Free Boards

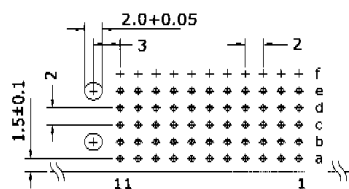


Right angle female half-size type C connector is polarized and provides 55 signal contacts in a 5 row X 11 position fully loaded configuration. Optional pre-assembled upper and lower ground return shields are also provided or could be ordered separately.

Dimensions



Recommended P.C.B. layout



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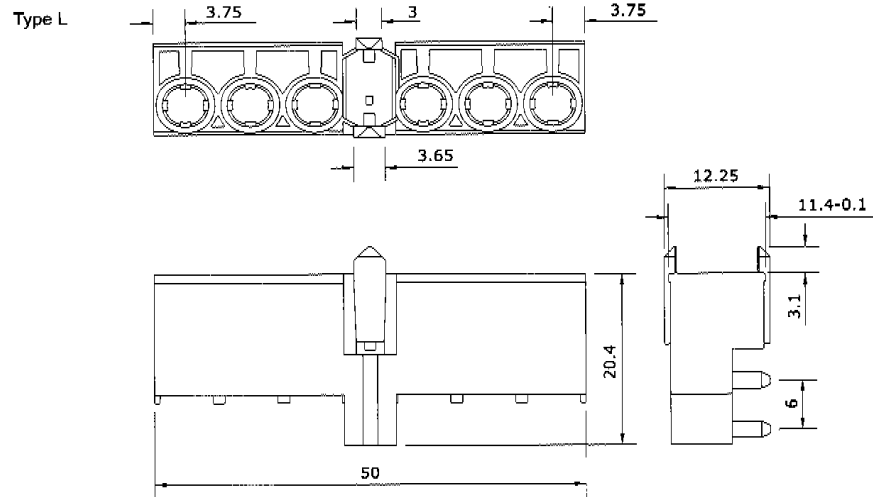
APFEL – 2.0mm HARD METRIC CONNECTORS

Right Angle Female Type L/M/N Connectors for Free Boards

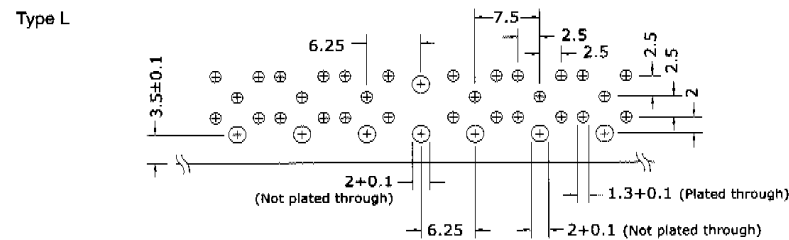


These connectors have 3 or 6 cavities for high current, coaxial or fiber optic contacts. The MPC on type L and M provides alignment guides and accepts optional coding keys, the half-size type N is also provided with guiding and polarized pegs.

Dimensions



Recommended P.C.B. layout



Dimensions shown are for reference purpose only. All dimensions are in millimeters unless otherwise specified.

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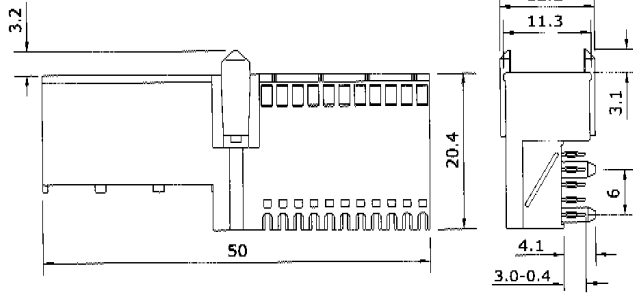
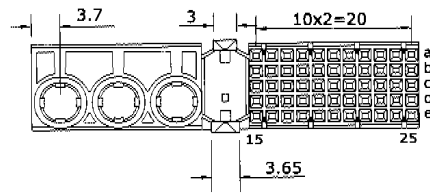
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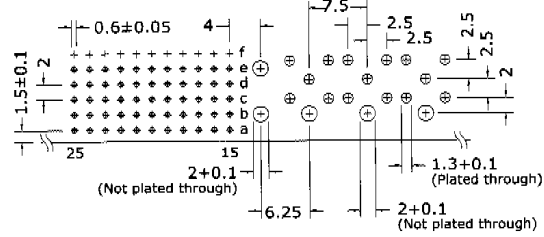
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APFEL – 2.0mm HARD METRIC CONNECTORS

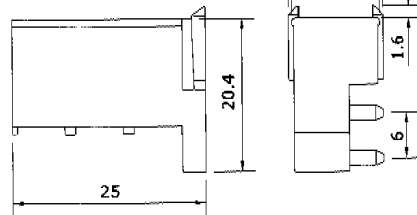
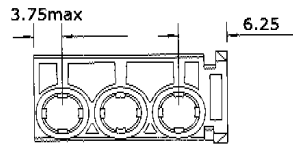
Dimensions
Type M



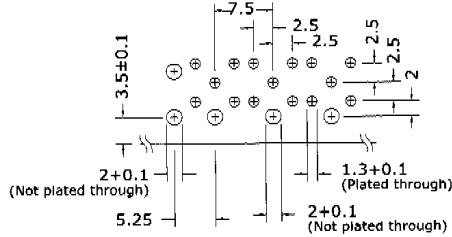
Recommended P.C.B. layout
Type M



Dimensions
Type N



Recommended P.C.B. layout
Type N



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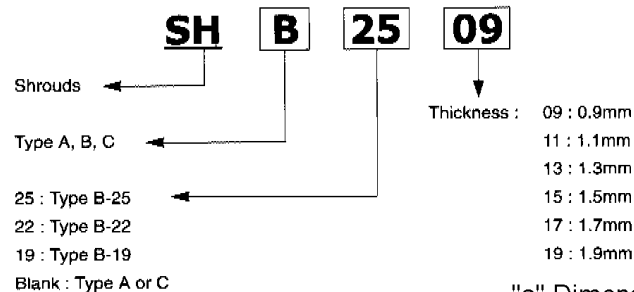
APFEL – 2.0mm HARD METRIC CONNECTORS

Shrouds for Type A/B/C Vertical Male Connectors

Shrouds are fitted over the secondary side of a connectors with extended length of tails to provide a protected mating interface and compensate for a range of backplane thickness. Shrouds with 6 different base thickness are provided for application in various thickness of backplane.



Ordering Information



"a" Dimension please refer to
Page 28

Dimensions shown are for reference purpose only. All dimensions are in millimeters unless otherwise specified.

please see next page for more information.

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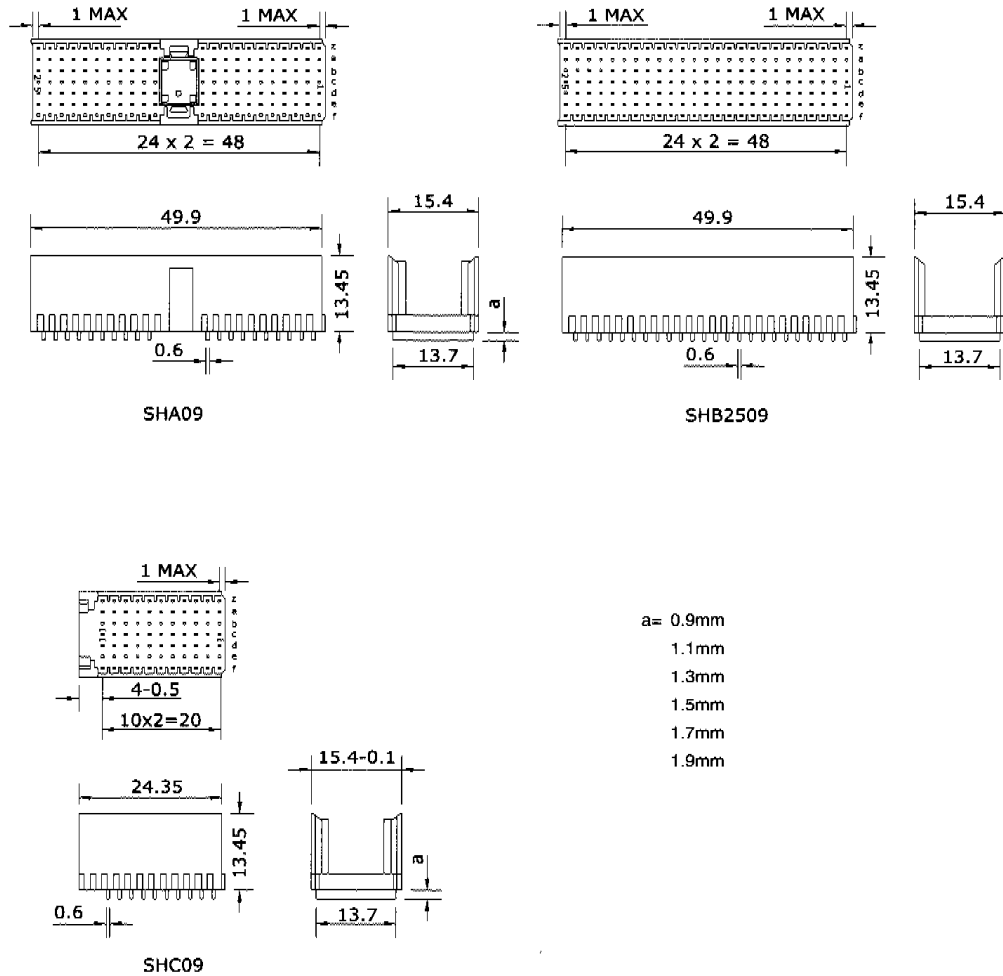
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APFEL – 2.0mm HARD METRIC CONNECTORS

Shrouds for Type A/B/C Vertical Male Connectors

Dimensions



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APFEL – 2.0mm HARD METRIC CONNECTORS

CODING KEYS

Coding keys are snapped into both male and female of MPC (Multipurpose Center) in the Type A, L and M connectors to prevent damage to the system resulted from incorrect insertion of cards. Only connector pairs equipped matching coding keys are intermateable. The unique color of the coding pairs provides easy visual identification of the correct mating connectors.

Ordering Information

Coding Key	Code Number	Color	Part Number	Coding Key	Code Number	Color	Part Number
	3568	Pastel orange	PMC3568		1247	Pastel orange	RMC1247
	3478	Steel Blue	PMC3478		1256	Steel Blue	RMC1256
	3467	Slate grey	PMC3467		1258	Slate grey	RMC1258
	3456	Cadmium yellow	PMC3456		1278	Cadmium yellow	RMC1278
	2578	Reseda green	PMC2578		1346	Reseda green	RMC1346
	1567	Brilliant blue	PMC1567		2348	Brilliant blue	RMC2348
	1356	Blue/lilac	PMC1356		2478	Blue/lilac	RMC2478
	4678	Ochre yellow	PMC4678		1235	Ochre yellow	RMC1235
	1248	Strawberry red	PMC1248		3567	Strawberry red	RMC3567
	1236	Nut brown	PMC1236		4578	Nut brown	RMC4578

The color/code number combinations listed above follow IEC61076-4-101 recommendation.
Consult factory for other versions.

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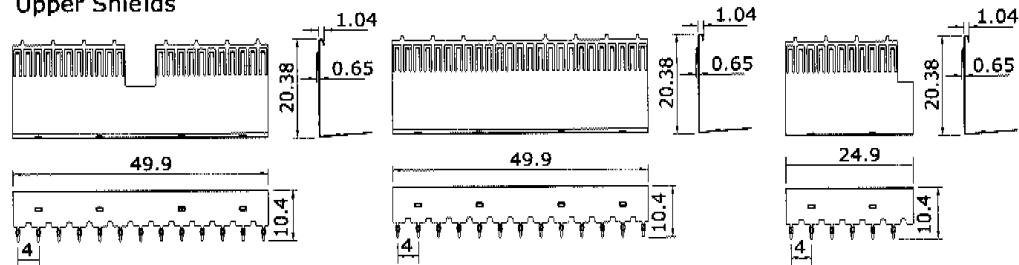
APFEL – 2.0mm HARD METRIC CONNECTORS

Shielding Covers

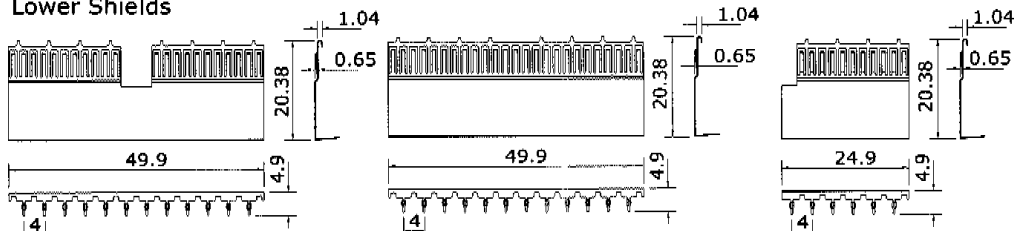
Upper ground return shield could be pre-installed to the female connectors, the lower shields are provided and assembled separately after installing of the connectors onto the printed circuit board as required. Both the upper and lower shielding covers could be ordered separately.



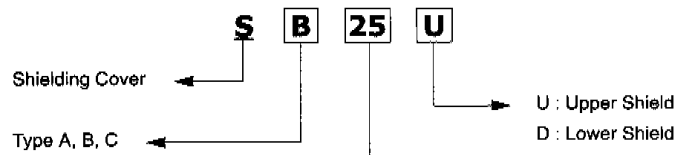
Dimensions Upper Shields



Lower Shields



Ordering Information



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APFEL – 2.0mm HARD METRIC CONNECTORS

Custom Enquiry Form

Date: _____

Company:..... Tel:.....

Your Name:..... Fax:.....

Address:..... E-mail:.....

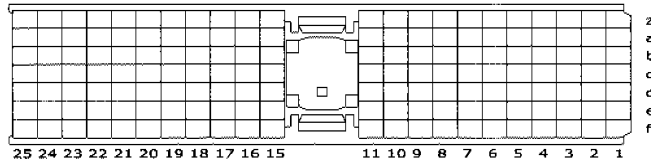
..... Sample Qty Required:.....

Estimated Annual Usage:.....

Fill in diagram below with designated contact types required. Unfilled positions to be left blank.

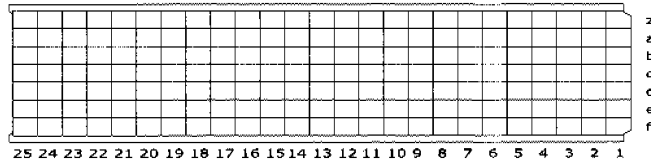
Type A Connector

Module A



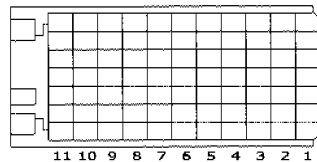
Type B Connector

Module B



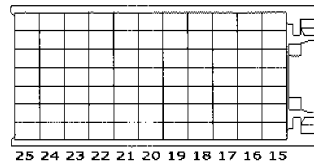
Type C Connector

Module C

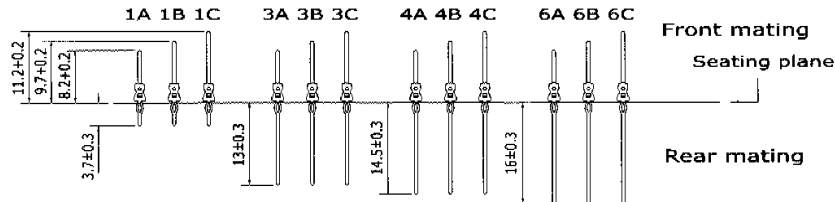


Type M Connector

Module M



Pin Options



Westfield/Apfel/Competition Part Number(s)

.....

PLEASE FAXBACK / POST / E-MAIL TO US FOR A RAPID RESPONSE! THANK YOU.

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Apfel DIN41612 Connectors

ENQUIRY FORM

Faxback to Westfield on: +44 (0) 1488 685430

Or telephone +44 (0) 1488 685183

SAMPLES / QUOTATION / TECHNICAL ASSISTANCE ON THE FOLLOWING:

Your Part No	Competition Part No	Apfel/Westfield Part No	Qty per mth/yr

Notes / Descriptions:.....

.....

.....

.....

Your Name:.....

Company:.....

Address:.....

.....

Tel:..... Fax:.....

E-Mail:

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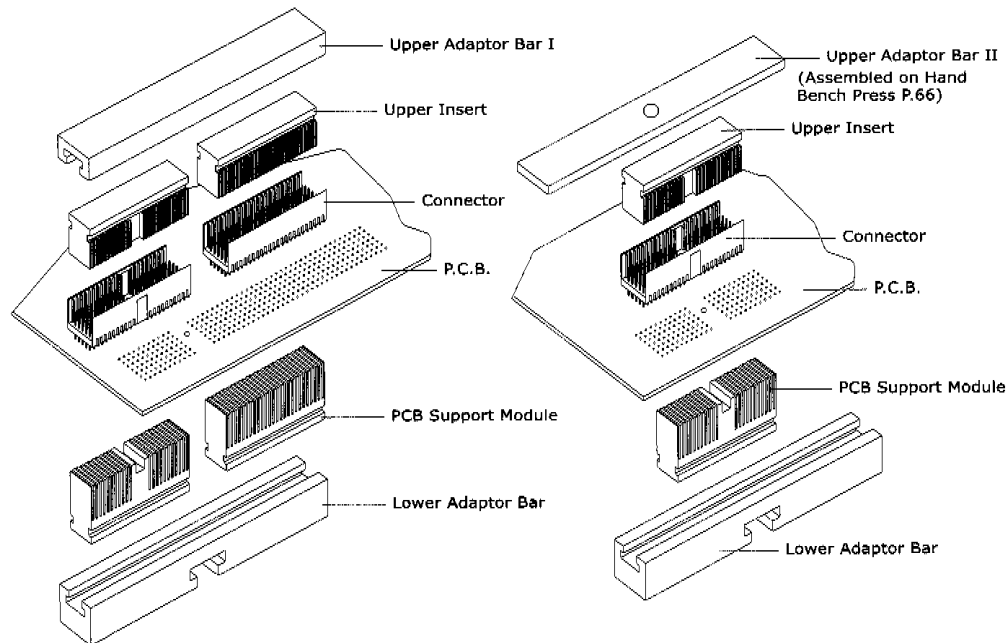
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Please call / fax / e-mail for samples and full engineering drawings. Certificates of conformance issued if required. .

APFEL – 2.0mm HARD METRIC CONNECTORS

Application Toolings

Male Connector Insertion



- For Compact PCI Application

Ordering Information

Description

Upper Adaptor Bar I
Upper Adaptor Bar II
Upper Insert — Type A
Upper Insert — Type B25
Upper Insert — Type B22
Upper Insert — Type B19
Upper Insert — Type C
PCB Support Module — Type A
PCB Support Module — Type B25
PCB Support Module — Type B22
PCB Support Module — Type B19
PCB Support Module — Type C
Lower Adaptor Bar

Tool Part Number

2HB I
2HB II
2T1TA
2T1TB25
2T1TB22
2T1TB19
2T1TC
2BTA
2BTB25
2BTB22
2BTB19
2BTC
2BHB

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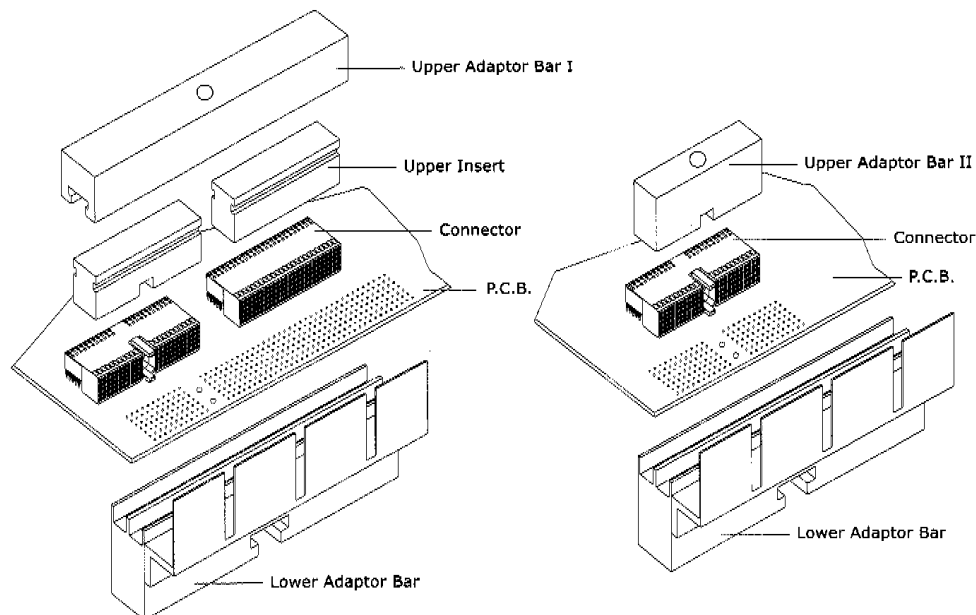
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APFEL – 2.0mm HARD METRIC CONNECTORS

Application Toolings

Female Connector Insertion



- For Compact PCI Application

Ordering Information

Description

Upper Adaptor Bar I
Upper Adaptor Bar II – Type A
Upper Adaptor Bar II – Type B25
Upper Adaptor Bar II – Type B22
Upper Adaptor Bar II – Type B19
Upper Adaptor Bar II – Type C
Upper Insert – Type A
Upper Insert – Type B25
Upper Insert – Type B22
Upper Insert – Type B19
Upper Insert – Type C
Lower Adaptor Bar

Tool Part Number

2FHB I
2FHB II A
2FHB II B25
2FHB II B22
2FHB II B19
2FHB II C
2TIFA
2TIFB25
2TIFB22
2TIFB19
2TIFC
2FBHB

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