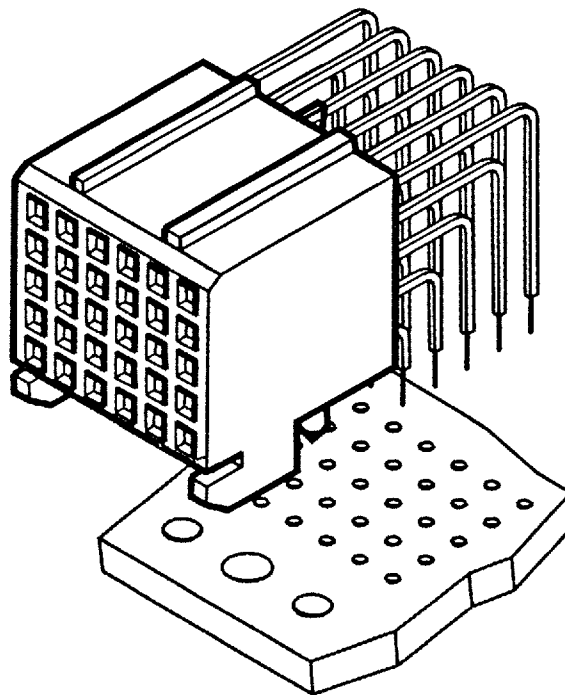




Female signal right angle solder pins connector - 5 ROWS

Features

- Grid at 2 mm spacing (0.079 inch)
- Tails fit into ø 0,6 mm nominal hole size
- Stackable end to end without contact loss together with all other MILLIPACS 1™ module style. Modular flexible system
- Hot riveting pegs number limited at 4 on the 240 position, at 2 on 120 and 60 way
- Recommended alternative fixing principle is provided with forced fit pegs
- Polarization by design
- For 3,2 mm PCB thickness: Consult the factory (★★)
- Material: LCP (SMT compatible)
- Standard plating: Gold over nickel



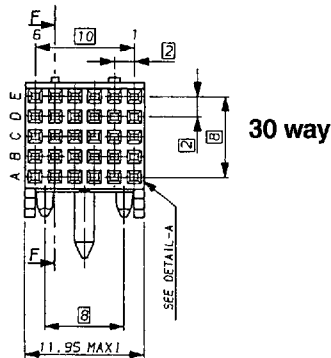
Ordering information (For additional information see Reference System on page 58)

Number of contacts	Part Number (P/N)	PCB thickness (mm)			Performance Level (PL) as per IEC Std.
		1,6	2,4	3,2	
		Replace “x” by			Replace “z” by
5 x 6 = 30	HM1 F51 F ^(★) x R000 Hz	A	B	(★★)	6 for PL 1 5 for PL 2 4 for PL 3
5 x 12 = 60	HM1 F52 F ^(★) x R000 Hz	A	B	(★★)	
5 x 24 = 120	HM1 F53 F ^(★) x R000 Hz	A	B	(★★)	
5 x 48 = 240	HM1 F54 F ^(★) x R000 Hz	A	B	(★★)	

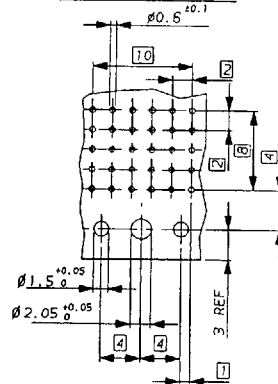
(★) R = with Hot Riveting pegs or P = with Forced fit pegs.



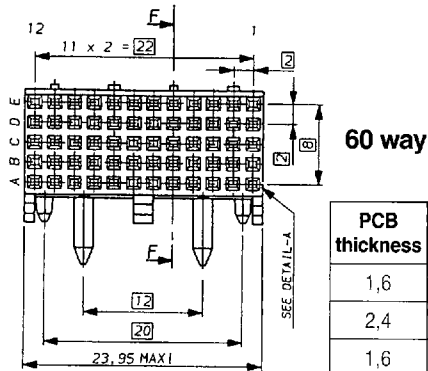
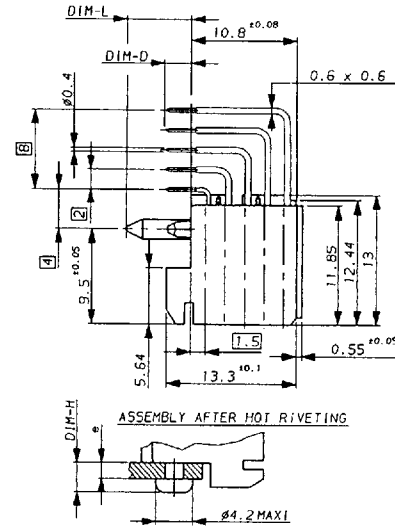
Female signal right angle solder pins connector - 5 ROWS



LAYOUT FOR P.C.B



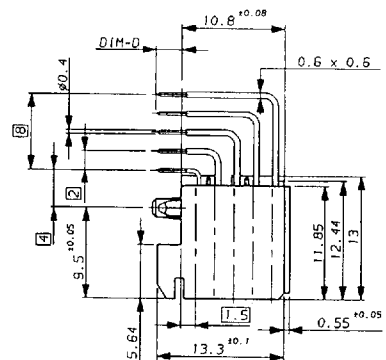
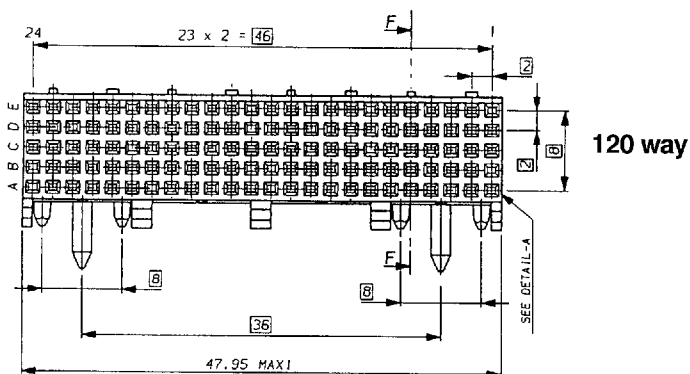
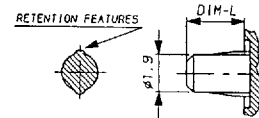
Hot riveting pegs



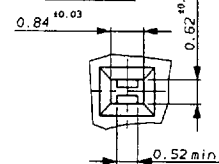
PCB thickness	Dim D	Dim L	Dim H	
1,6	2,9 ±0,3	5,2	3,08 max	Hot riveting peg
2,4	3,6 ±0,3	6	3,78 max	
1,6	2,9 ±0,3	3		Forced fit peg
2,4	3,6 ±0,3	3		

Forced fit pegs

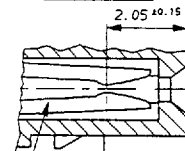
DETAIL OF PRESS-IN PEGS



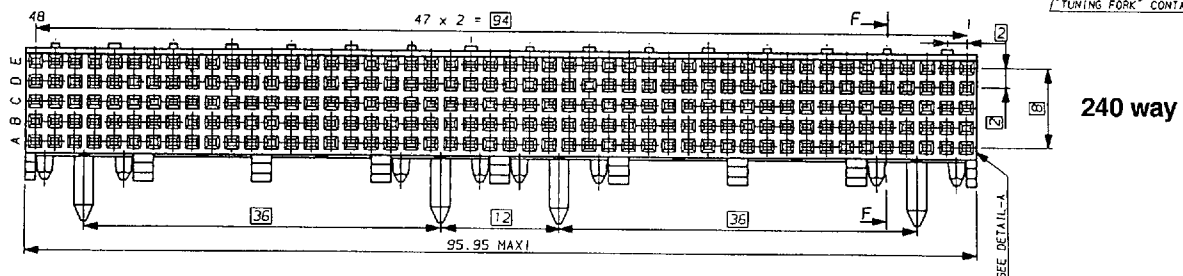
DETAIL-A



SECTION-FF



*"TUNING FORK" CONTACT TYPE





Reference system - Board connectors

HM1

F

4

2

F

A

P 000

H

6

Product Family

HM1 = MILLIPACS 1™

Product Type

- F = Female signal right angle
- G = Female power-3 Amps right angle
- S = Female signal straight (solder and press-fit)
- N = Male signal straight narrow body
- W = Male signal straight wide body
- T = Male signal right angle narrow body
- M = Male power-3 Amps straight narrow body
- V = Male power-3 Amps straight wide body
- Z = Special type (monoblock and mixed - other specific products -...) consult the factory for P / N

Number of rows

- 4 = 4 rows
- 5 = 5 rows
- 6 = 4 rows + 2 rows Shielding
- 7 = 5 rows + 2 rows Shielding

Body Length

- 1 = 12 mm (24 ways signal - 8 ways power-3 Amps)
- 2 = 24 mm (48 ways signal)
- 3 = 48 mm (96 ways signal)
- 4 = 96 mm (192 ways signal)
- 9 = Special type (Monoblock - Mixed -...) consult the factory for P / N

Mating part

F = Female contact

4 rows							Male mating part contact type	Mating part configurations
5 rows								
	row a	row b	row c	row d	row e			
A =	5,00	5,00	5,00	5,00	5,00	Signal or power		
B =	6,50	5,00	5,00	5,00	5,00	Signal or power		
C =	6,50	5,75	5,75	6,50	5,75	Signal or power		
D =	6,50	6,50	6,50	6,50	6,50	Signal or power		
E =	5,75	7,25	5,75	5,75	5,75	Signal or power		
H =	8,00	8,00	7,25	6,50	6,50	Signal or power		
K =	6,50	8,00	6,50	6,50	6,50	Signal or power		
L =	5,75	5,75	5,75	5,75	5,75	Signal or power		
M =	7,25	7,25	7,25	7,25	7,25	Power only		
N =	8,00	8,00	8,00	8,00	8,00	Power only		
Z =	Other special configurations, consult the factory for P / N							

Termination Type

- A = Right angle Solder for PCB thickness = 1,6 mm
- B = Right angle Solder for PCB thickness = 2,4 mm
- C = Right angle Press-fit for hole $\varnothing$ 0,60 - 0,03/+ 0,05
- D = Right angle Press-fit for hole $\varnothing$ 0,70 - 0,05/+ 0,07
- T = Straight Solder 4,25 mm signal - 5,5 power (male only)
- P = Straight Press-fit 4,25 (male) - 3,5 (female)
- K = Straight Press-fit + Rear Plug up 11,8 mm length
- V = Straight Press-fit + mini WW + Rear Plug up 13,6 mm
- L = Straight Press-fit + mini WW + Rear Plug up 15,6 mm length
- N = Straight Press-fit + mini WW + Rear Plug up 17,0 mm length
- R = Straight Solder 3,30 mm length female only
- S = Straight Solder 4,10 mm length (female only)
- M = Straight Press-fit for PCB thickness = 5,08 mm Power only
- Z = Mixed termination type or termination length consult the factory for P / N

Peculiarities

- R 000 = Male standard products - Heat stake retention pegs for female right angle
- P 000 = Press-in retention pegs for female right angle
- (xxxx) = Special products (monoblock - mixed - mating part - termination - plating...) consult the factory for P / N

Insulating material

H = High temperature material

Performance Level

- 6 = PL 1 = 125 operations + 10 days mixed gas + 125 operations
- 5 = PL 2 = 50 operations + 4 days mixed gas + 50 operations
- 4 = PL 3 = 30 operations
- 9 = PL 1 = Finish nickel/palladium + gold flash
- 8 = (Reserved)
- 7 = (Reserved)



Standard data

- Contact spacing: 2 x 2 mm
- Insulator material: High temperature thermoplastic glass filled (vapor phase or infra red compatible)
- Contact material: Phosphor bronze Brass for male solder
- Contact finish: Gold over Nickel on mating area - Tin lead over Nickel on Termination area
- Termination style: Solder on male and female - Press-fit on male and female
- Plated through hole sizes:
Solder $\varnothing 0,7 \pm 0,1$ - Back plane
Press-fit $\varnothing 0,71 \pm 0,06$ - Back plane
Solder $\varnothing 0,6 \pm 0,1$ - Daughter Board
Press-fit $\varnothing 0,6 \pm 0,05$ - Daughter Board
- Typical land size:
 $\varnothing 1,15$ mm - Back plane side
 $\varnothing 1,10$ mm - Daughter Board size
- Standard pin lengths:
 - Mated part signal:
5 - 5,75 - 6,50 and 7,25
sequential mating lengths are standardized
 - Mated part power:
6,50 - 7,25 and 8 mm
 - Solder post length: 4,3
 - Press-fit post length:
4,3 - 11,8 - 15,6
- Housing style:
 - Narrow Body (shape 1)
= 14 mm pitch (4 rows)
 - Wide Body (shape 2)
= 16 mm pitch (4 rows) -
18 mm (5 rows).

Electrical data

- Insulation resistance:
5000 M Ω initial - 1000 M Ω after test
- Contact resistance:
20 m Ω initial and after test
- Withstanding voltage: 1000 V.RMS
- Creepage distance: 0,7 mm
- Capacitance at 1 MHz and 1 ps risetime:
2 pF max Adjacent
3 pF max single line with surrounded lines grounded
- Inductance at 1 ns risetime and 50 Ω :
25 nH max Adjacent
17 nH max single line with surrounded lines grounded
- Propagation delay: 225 ps max
- Skew (row to row): 40 ps max
- Cross talk at 1 ns risetime and 50 Ω with 3 : 1 signal/ground ratio:
5% near end
1% far end
- System speed (bit/second)
Up to 600 Mbit/s with required ground ratio

Mechanical data

- Insertion force: $F < 0,45$ N
- Normal force:
 $P \geq 0,55$ N (cross rods)
- Hertz stress: $HS \geq 200$ Kpsi
- Minimum wipe:
2 mm (on shortest pin)
- Male pin size: 0,5 mm square
- Female housing hold down:
Heat stake pegs or
Forced fit pegs (preferred)
- Daughter card edge to back panel dimension: 10 mm
- Coding parts fit into housing on both male and female parts
- Polarization by design
- Fixed connector with 2 housing style:
 - Narrow wall for maximum density,
 - Wide wall for better guiding with
PCB $> 1,6$ mm thickness
- Press-fit retention force: > 25 N
- Contact retention in housing
5 N for female
10 N for male

Climatic categories as per IEC/CECC standards

Performance level (PL)	Temperature °C (Lower and upper) Number of days of Damp Heat	Mechanical operations (minimum)	Industrial Atmosphere (mixed gaz low ppm)
PL 1	- 55°C + 125°C 56 days	250 (2 x 125)	10 days
PL 2	- 55°C + 125°C 21 days	100 (2 x 50)	4 days
PL 3	- 25°C + 85°C Damp Heat = Non applicable	30 (2 x 15)	N.A.