






METRAL® POWER CONNECTORS STANDARD

-  Header, 4 row, straight, wide body
-  Header, 4 row, straight, narrow body
-  Receptacle, 4 row, right angle
-  Header, 5 row, straight, wide body
-  Receptacle, 5 row, right angle

Header, 4 row power, straight, solder to board, wide body

FEATURES

- In accordance with IEC 60917 and IEC 61076-4-104 (Futurebus+)
- 4 x 2 power blades contacts
- 12 mm power modules are form- and fit interchangeable with signal modules on same footprint

TECHNICAL DATA

PHYSICAL

- spacing: 2,00 mm x 2,00 mm
- housing: glass-filled LCP (30% glass), colour natural
- flammability rating: UL 94 V-0
- contact material: phosphor bronze
- performance level: Telcordia CO

ELECTRICAL

- current rating: 3 A
- insulation resistance: 5x10³ MΩ initially, 1x10³ MΩ after tests
- withstanding voltage: 1000 V rms (sea level)

MECHANICAL PERFORMANCE

- insertion force: 1,50 N max. per individual power contact (mating)
- withdrawal force: 0,30 N max. per individual power contact (unmating)
- recommended hole diameter: 0,65-0,80 mm

ENVIRONMENTAL

- Operating temperature -55°C to + 125°C
- RoHs information, this product is compatible according to the European Union Directive 2002/95/IEC

PACKAGING

- Standard Tubes

PROCESSING INFORMATION

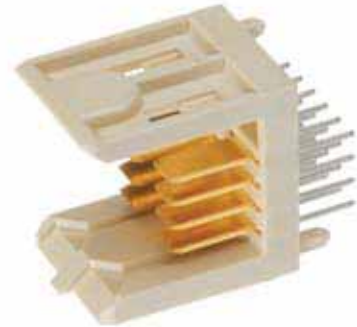
- Applicable process: wave, IR, vapor phase

REFERENCE DATA

- Product Specification GS-12-180
- Application Specification BUS-20-075

APPLICATION EQUIPMENT

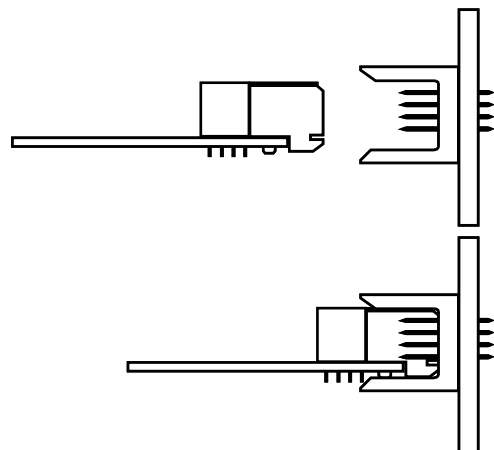
- for application equipment, check out the application equipment table on page 217-223



MATING DATA

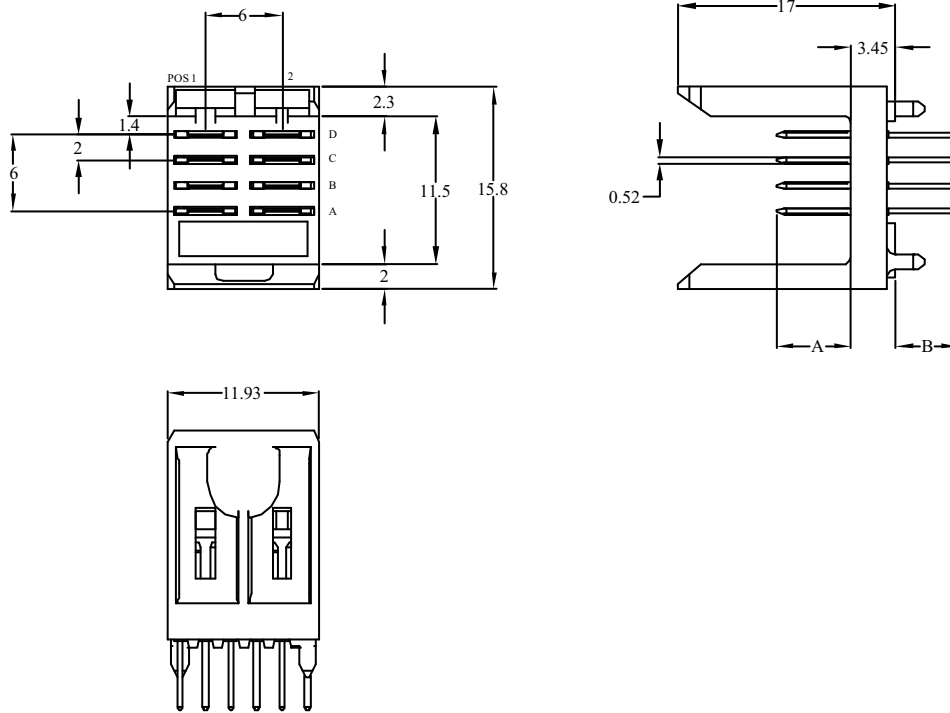
- Receptacle, right angle, press-fit, page 101
 - part number 88949-102LF
- Receptacle, right angle, solder-to-board, page 99
 - part number 89039-101LF
- Receptacle, right angle, Pin-in-Paste, page 103
 - part number 72651-101LF

TYPICAL APPLICATIONS



Header, 4 row power, straight, solder to board, wide body

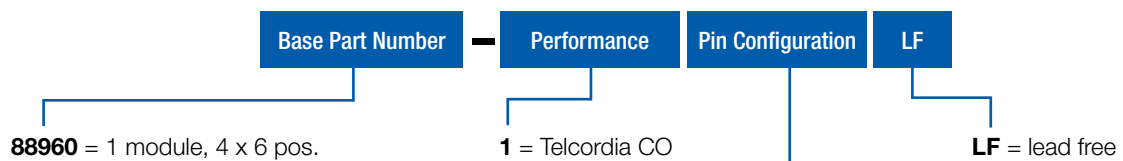
PRODUCT



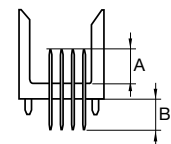
PCB pattern P5, see chapter PCB layouts

PARTNUMBERS

88960 - 101LF



yy	mating length (A)	tail length (B)
01	6,50 mm	4,25 mm



Note: for other special patterns or loadings, please check drawings, all other configurations on request only

Header, 4 row power, straight, press-fit, wide body

FEATURES

- In accordance with IEC 60917 and IEC 61076-4-104 (Futurebus+)
- 4 x 2 power blades contacts
- 12 mm power modules are form- and fit interchangeable with signal modules on same footprint
- Eye the needle press-fit contac

TECHNICAL DATA

PHYSICAL

- spacing: 2,00 mm x 2,00 mm
- housing: glass-filled LCP (30% glass), colour natural
- flammability rating: UL 94 V-0
- contact material: phosphor bronze
- performance level: Telcordia CO

ELECTRICAL

- current rating: 3 A
- insulation resistance: $5 \times 10^3 \text{ M}\Omega$ initially, $1 \times 10^3 \text{ M}\Omega$ after tests
- withstanding voltage: 1000 V rms (sea level)

MECHANICAL PERFORMANCE

- insertion force: 1,50 N max. per individual power contact (mating)
- withdrawal force: 0,30 N max. per individual power contact (unmating)
- press-fit contact insertion: 65 N max. per pin
- press-fit pin withdrawal: 15 N min. per pin
- recommended hole diameter: 0,65-0,80 mm

ENVIRONMENTAL

- Operating temperature -55°C to + 125°C
- RoHs information, this product is compatible according to the European Union Directive 2002/95/IEC

PACKAGING

- Standard Tubes

PROCESSING INFORMATION

- Applicable process: press fit

REFERENCE DATA

- Product Specification GS-12-180
- Application Specification BUS-20-075

APPLICATION EQUIPMENT

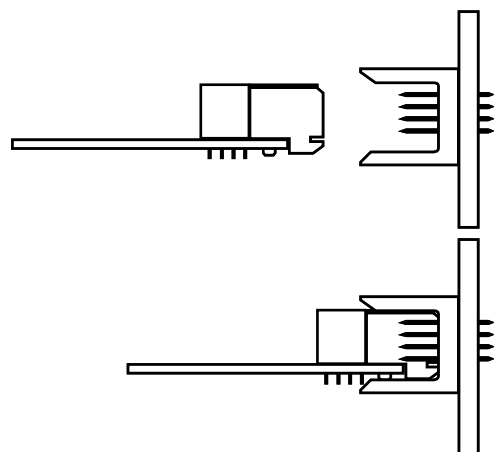
- for application equipment, check out the application equipment table on page 217-223



MATING DATA

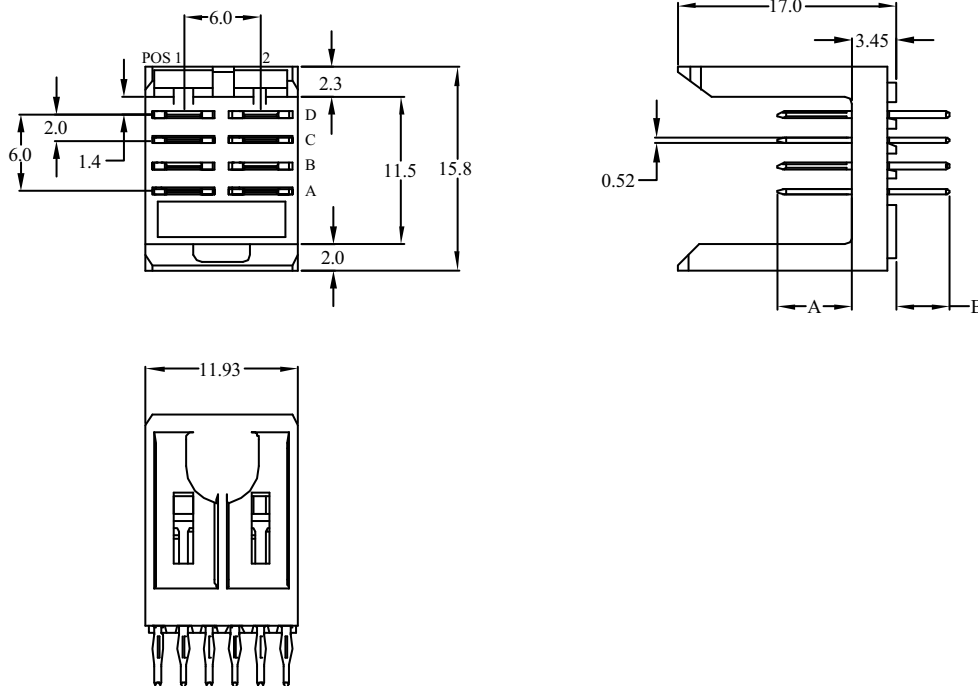
- Receptacle, right angle, press-fit, page 101
 - part number 88949-102LF
- Receptacle, right angle, solder-to-board, page 99
 - part number 89039-101LF
- Receptacle, right angle, Pin-in-Paste, page 103
 - part number 72651-101LF

TYPICAL APPLICATIONS



Header, 4 row power, straight, press-fit, wide body

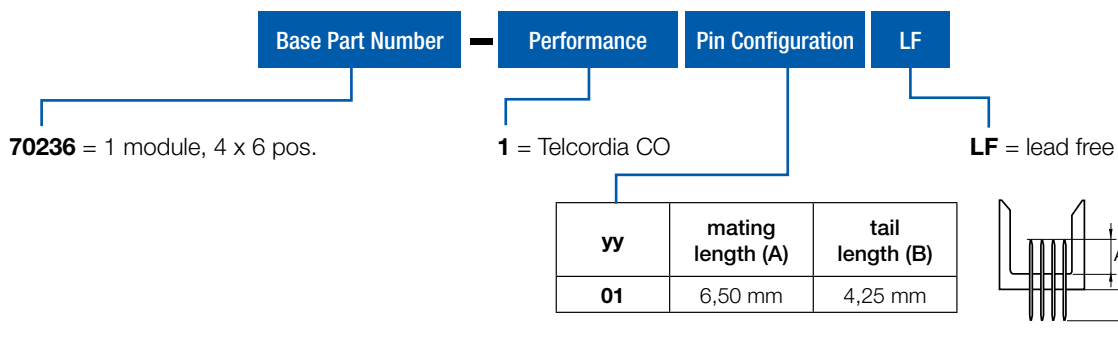
PRODUCT



PCB pattern P6, see chapter PCB layouts

PARTNUMBERS

70236 - 101LF

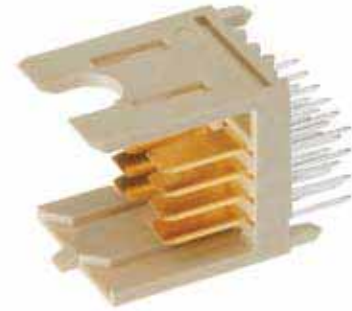


Note: for other special patterns or loadings, please check drawings, all other configurations on request only

Header, 4 row, power, straight, solder to board, narrow body

FEATURES

- In accordance with IEC 60917 and IEC 61076-4-104 (Futurebus+)
- 4 row 2 power blades contacts
- Narrow body housing
- 12 mm power modules are form- and fit interchangeable with signal modules on same footprint



TECHNICAL DATA

PHYSICAL

- spacing: 2,00 mm x 2,00 mm
- housing: glass-filled LCP (30% glass), colour natural
- flammability rating: UL 94 V-0
- contact material: phosphor bronze
- performance level: Telcordia CO

ELECTRICAL

- current rating: 3 A
- insulation resistance: 5x10³ MΩ initially, 1x10³ MΩ after tests
- withstanding voltage: 1000 V rms (sea level)

MECHANICAL PERFORMANCE

- insertion force: 1,50 N max. per individual power contact (mating)
- withdrawal force: 0,30 N max. per individual power contact (unmating)
- recommended hole diameter: 0,65-0,80 mm

ENVIRONMENTAL

- Operating temperature -55°C to + 125°C
- RoHs information, this product is compatible according to the European Union Directive 2002/95/IEC

PACKAGING

- Standard Tubes

PROCESSING INFORMATION

- Applicable process: wave, IR, vapor phase

REFERENCE DATA

- Product Specification GS-12-180
- Application Specification BUS-20-075

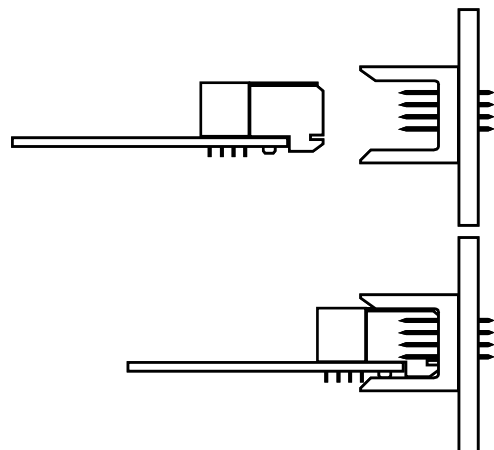
APPLICATION EQUIPMENT

- for application equipment, check out the application equipment table on page 217-223

MATING DATA

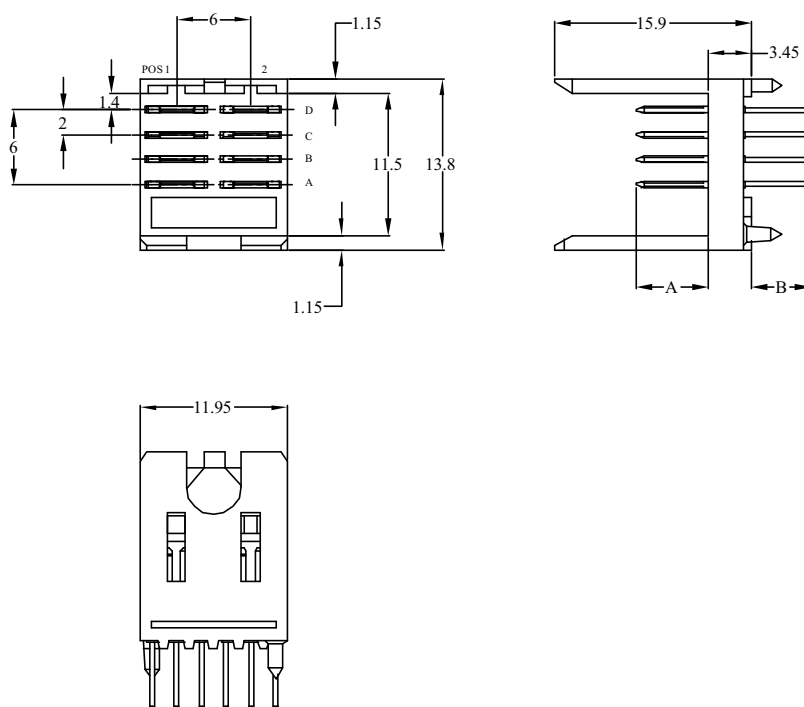
- Receptacle, right angle, press-fit, page 101
 - part number 88949-102LF
- Receptacle, right angle, solder-to-board, page 99
 - part number 89039-101LF
- Receptacle, right angle, Pin-in-Paste, page 103
 - part number 72651-101LF

TYPICAL APPLICATIONS



Header, 4 row, power, straight, solder to board, narrow body

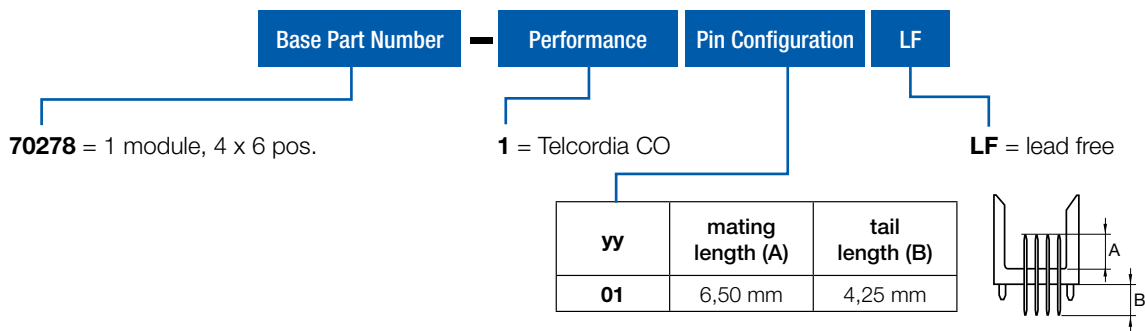
PRODUCT



PCB pattern P3, see chapter PCB layouts

PARTNUMBERS

70278 - 101LF



Note: for other special patterns or loadings, please check drawings, all other configurations on request only

Header, 4 row, power, straight, press-fit, narrow body

FEATURES

- In accordance with IEC 60917 and IEC 61076-4-104 (Futurebus+)
- 4 x 2 power blades contacts
- Narrow body housing
- 12 mm power modules are form- and fit interchangeable with signal modules on same footprint
- Eye the needle press-fit contact

TECHNICAL DATA

PHYSICAL

- spacing: 2,00 mm x 2,00 mm
- housing: glass-filled LCP (30% glass), colour natural
- flammability rating: UL 94 V-0
- contact material: phosphor bronze
- performance level: Telcordia CO

ELECTRICAL

- current rating: 3 A
- insulation resistance: 5×10^3 M Ω initially, 1×10^3 M Ω after tests
- withstanding voltage: 1000 V rms (sea level)

MECHANICAL PERFORMANCE

- insertion force: 1,50 N max. per individual power contact (mating)
- withdrawal force: 0,30 N max. per individual power contact (unmating)
- press-fit contact insertion: 65 N max. per pin
- press-fit pin withdrawal: 15 N min. per pin
- recommended hole diameter: 0,65-0,80 mm

ENVIRONMENTAL

- Operating temperature -55°C to + 125°C
- RoHs information, this product is compatible according to the European Union Directive 2002/95/IEC

PACKAGING

- Standard Tubes

PROCESSING INFORMATION

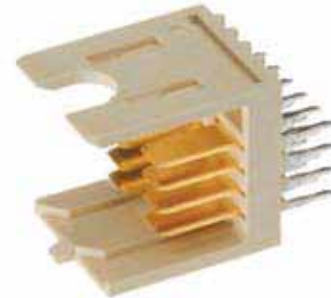
- Applicable process: press fit

REFERENCE DATA

- Product Specification GS-12-180
- Application Specification BUS-20-075

APPLICATION EQUIPMENT

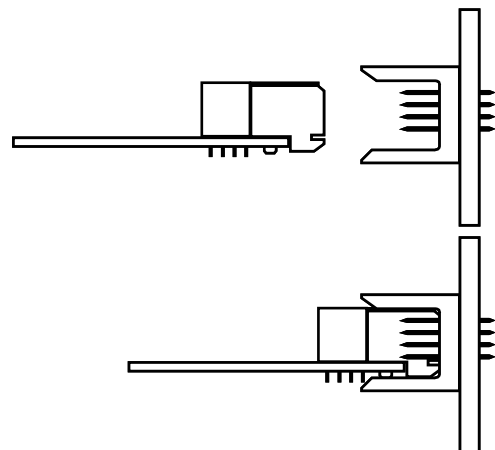
- for application equipment, check out the application equipment table on page 217-223



MATING DATA

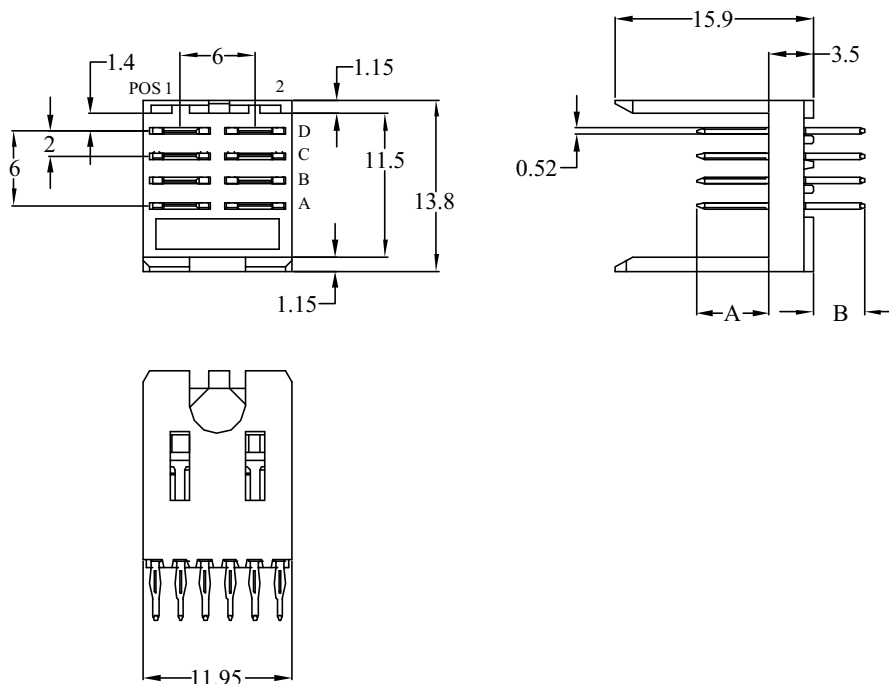
- Receptacle, right angle, press-fit, page 101
 - part number 88949-102LF
- Receptacle, right angle, solder-to-board, page 99
 - part number 89039-101LF
- Receptacle, right angle, Pin-in-Paste, page 103
 - part number 72651-101LF

TYPICAL APPLICATIONS



Header, 4 row, power, straight, press-fit, narrow body

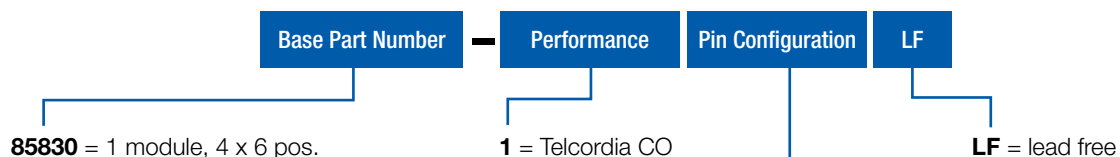
PRODUCT



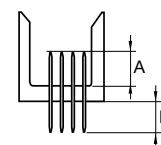
PCB pattern P4, see chapter PCB layouts

PARTNUMBERS

85830 - 101LF



yy	mating length (A)	tail length (B)
01	6,50 mm	4,30 mm



Note: for other special patterns or loadings, please check drawings, all other configurations on request only

Receptacle, 4 row, power, right angle, solder to board

FEATURES

- In accordance with IEC 60917 and IEC 61076-4-104 (Futurebus+)
- 4 x 2 dual beam power blades contacts
- 12 mm power modules are form- and fit interchangeable with signal modules on same footprint
- Modular design guarantees flexibility
- Stackable end-to-end without loss of position
- Stackable with other METRAL® function modules (power, I/O)

TECHNICAL DATA

PHYSICAL

- spacing: 2,00 mm x 2,00 mm
- housing: glass-filled LCP (30% glass), colour natural
- flammability rating: UL 94 V-0
- contact material: phosphor bronze
- performance level: Telcordia CO

ELECTRICAL

- current rating: 3 A
- insulation resistance: $5 \times 10^3 \text{ M}\Omega$ initially, $1 \times 10^3 \text{ M}\Omega$ after tests
- withstanding voltage: 1000 V rms (sea level)

MECHANICAL PERFORMANCE

- insertion force: 1,50 N max. per individual power contact (mating)
- withdrawal force: 0,30 N max. per individual power contact (unmating)
- recommended hole diameter: 0,65-0,80 mm

ENVIRONMENTAL

- Operating temperature -55°C to + 125°C
- RoHs information, this product is compatible according to the European Union Directive 2002/95/IEC

PACKAGING

- Standard Tubes

PROCESSING INFORMATION

- Applicable process: wave, IR, vapor phase

REFERENCE DATA

- Product Specification GS-12-453

APPLICATION EQUIPMENT

- for application equipment, check out the application equipment table on page 217-223



MATING DATA

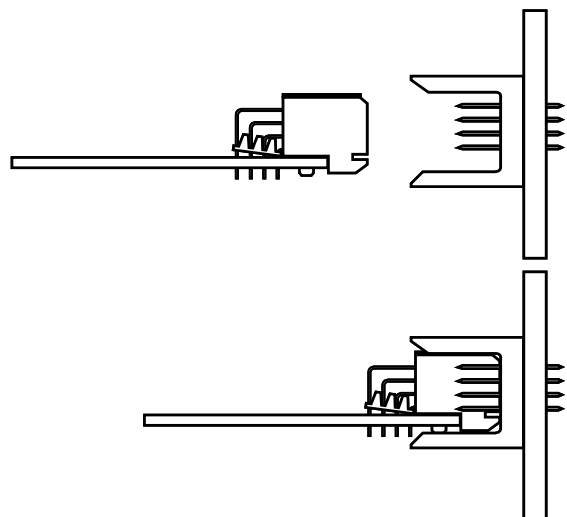
Header, straight, press-fit, page 93

- 1 module – part number 70236-101LF

Header, straight, solder-to-board, page 91

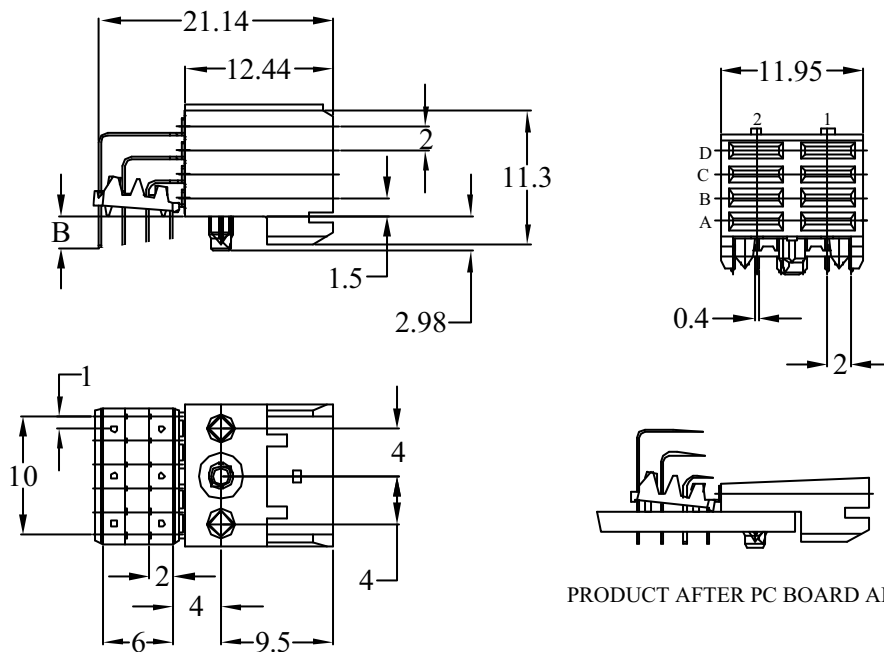
- 1 module – part number 88960-101LF

TYPICAL APPLICATIONS



Receptacle, 4 row, power, right angle, solder to board

PRODUCT

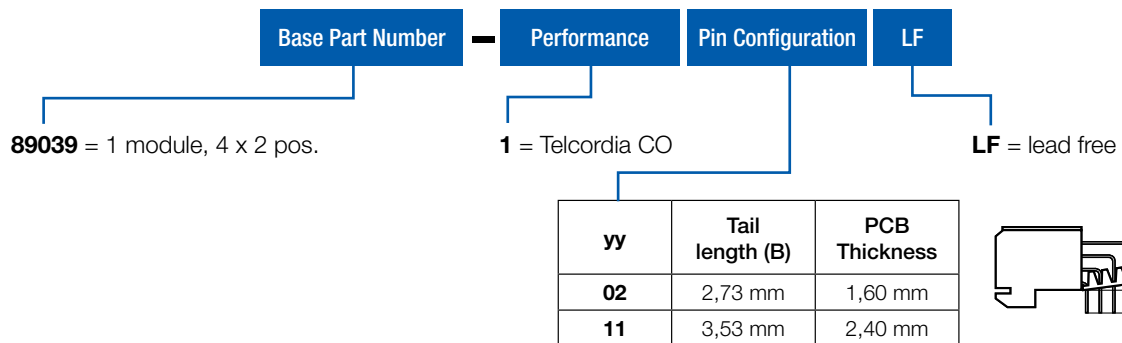


PRODUCT AFTER PC BOARD APPLICATION.

PCB pattern P1, see chapter PCB layouts

PARTNUMBERS

89039 - 1yyLF



Note: for other special patterns or loadings, please check drawings, all other configurations on request only

Receptacle, 4 row, power, right angle, press-fit

FEATURES

- In accordance with IEC 60917 and IEC 61076-4-104 (Futurebus+)
- 4 x 2 dual beam power blades contacts
- 12 mm power modules are form- and fit interchangeable with signal modules on same footprint
- Modular design guarantees flexibility
- Stackable end-to-end without loss of position
- Stackable with other METRAL® function modules (power, I/O)
- Press block ensures accurate position of press-fit tails for easy mounting
- Eye the needle press-fit contact



TECHNICAL DATA

PHYSICAL

- spacing: 2,00 mm x 2,00 mm
- housing: glass-filled LCP (30% glass), colour natural
- flammability rating: UL 94 V-0
- contact material: phosphor bronze
- performance level: Telcordia CO

ELECTRICAL

- current rating: 3 A
- insulation resistance: $5 \times 10^3 \text{ M}\Omega$ initially, $1 \times 10^3 \text{ M}\Omega$ after tests
- withstanding voltage: 1000 V rms (sea level)

MECHANICAL PERFORMANCE

- insertion force: 1,50 N max. per individual power contact (mating)
- withdrawal force: 0,30 N max. per individual power contact (unmating)
- press-fit contact insertion: 55 N max. per pin
- press-fit pin withdrawal: 15 N min. per pin
- recommended hole diameter: 0,65-0,80 mm

ENVIRONMENTAL

- Operating temperature -55°C to $+125^\circ\text{C}$
- RoHs information, this product is compatible according to the European Union Directive 2002/95/IEC

PACKAGING

- Standard Tubes

PROCESSING INFORMATION

- Applicable process: press fit

REFERENCE DATA

- Press-peg application, TA-0941
- Product Specification GS-12-453

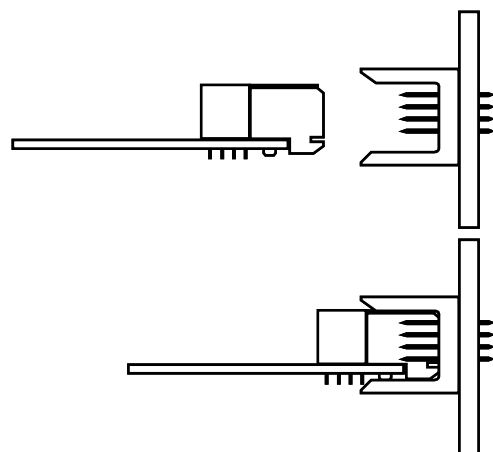
APPLICATION EQUIPMENT

- for application equipment, check out the application equipment table on page 217-223

MATING DATA

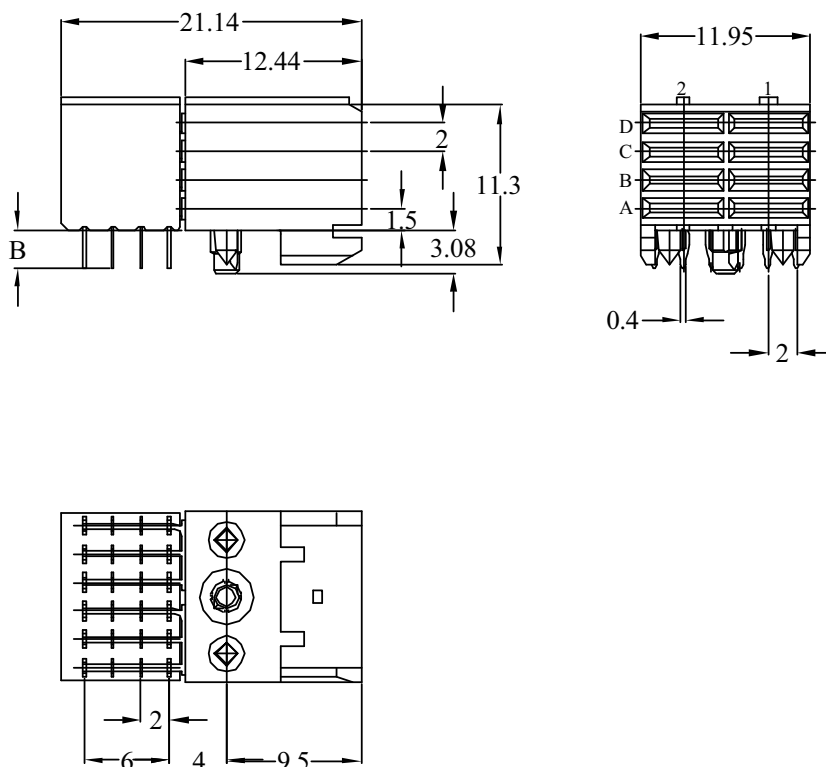
- Header, straight, press-fit, page 93
 - 1 module – part number 70236-101LF
- Header, straight, solder-to-board, page 91
 - 1 module – part number 88960-101LF

TYPICAL APPLICATIONS



Receptacle, 4 row, power, right angle, press-fit

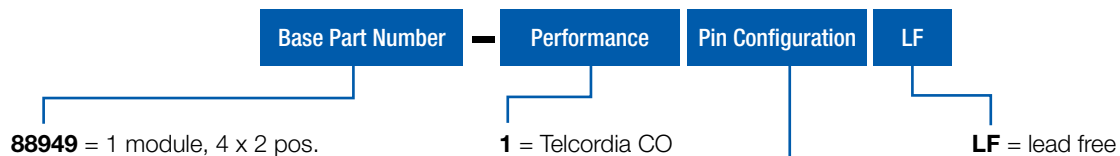
PRODUCT



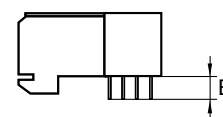
PCB pattern P1, see chapter PCB layouts

PARTNUMBERS

88949 - 1yyLF



yy	Tail length (B)	PCB Thickness
02	2,73 mm	1,60 mm
12	3,53 mm	2,40 mm



Note: blue marked in **tail length** is the preferred recommended standard for other special patterns or loadings, please check drawings, all other configurations on request only

Receptacle, 4 row, power, right angle, pin-in-paste

FEATURES

- In accordance with IEC 60917 and IEC 61076-4-104 (Futurebus+)
- 4 x 2 dual beam power blades contacts
- 12 mm power modules are form- and fit interchangeable with signal modules on same footprint
- Modular design guarantees flexibility
- Stackable end-to-end without loss of position
- Stackable with other METRAL® function modules (power, I/O)

TECHNICAL DATA

PHYSICAL

- spacing: 2,00 mm x 2,00 mm
- housing: glass-filled LCP (30% glass), colour natural
- flammability rating: UL 94 V-0
- contact material: phosphor bronze
- performance level: Telcordia CO

ELECTRICAL

- current rating: 3 A
- insulation resistance: $5 \times 10^3 \text{ M}\Omega$ initially, $1 \times 10^3 \text{ M}\Omega$ after tests
- withstanding voltage: 1000 V rms (sea level)

MECHANICAL PERFORMANCE

- insertion force: 1,50 N max. per individual power contact (mating)
- withdrawal force: 0,30 N max. per individual power contact (unmating)
- recommended hole diameter: 0,65-0,80 mm

ENVIRONMENTAL

- Operating temperature -55°C to + 125°C
- RoHs information, this product is compatible according to the European Union Directive 2002/95/IEC

PACKAGING

- Standard Tubes

PROCESSING INFORMATION

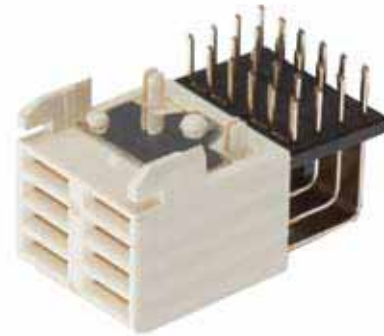
- automatic Surface-mount reflow process, resistance for Lead Free reflow temperature

REFERENCE DATA

- Packaging specification GS-14-920
- Product Specification GS-12-453

APPLICATION EQUIPMENT

- for application equipment, check out the application equipment table on page 217-223



MATING DATA

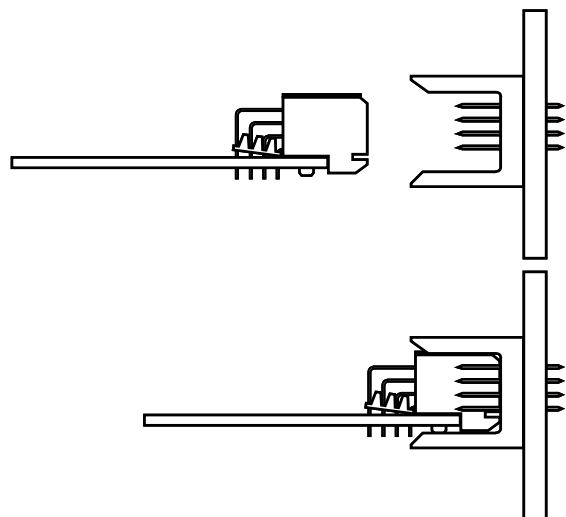
Header, straight, press-fit, page 93

- 1 module – part number 70236-101LF

Header, straight, solder-to-board, page 91

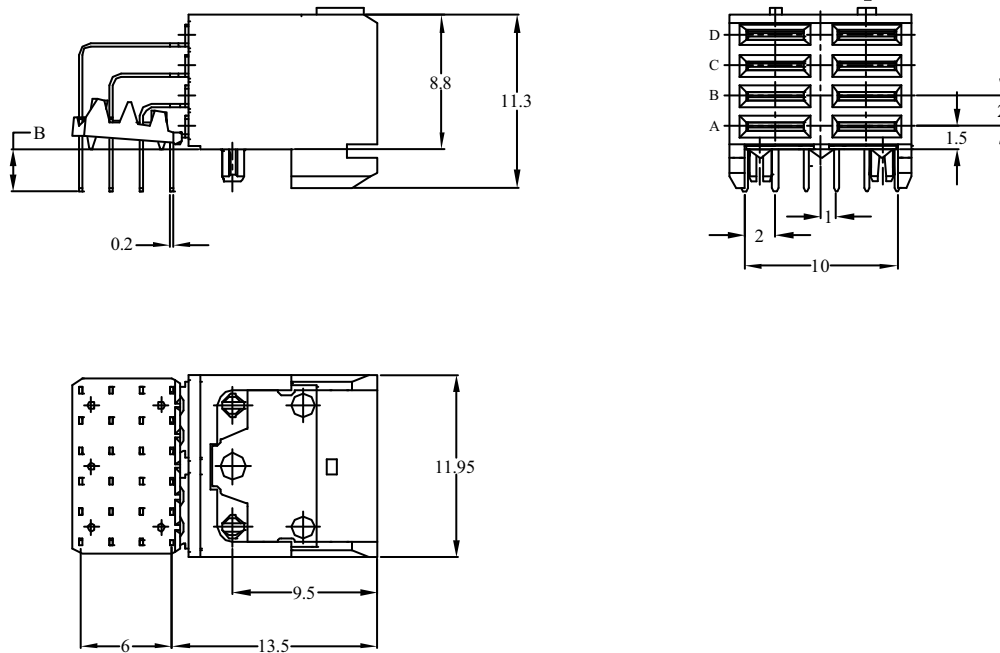
- 1 module – part number 88960-101LF

TYPICAL APPLICATIONS



Receptacle, 4 row, power, right angle, pin-in-paste

PRODUCT

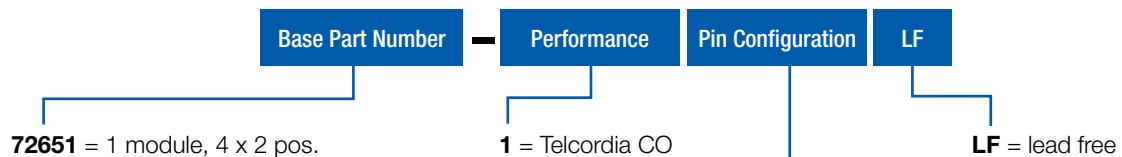


PCB pattern P1, see chapter PCB layouts

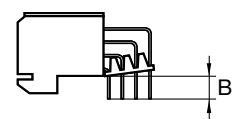
POWER CONNECTORS

PARTNUMBERS

72651 - 1yyLF



yy	Tail length (B)	PCB Thickness
02	2,73 mm	1,60 mm
11	3,53 mm	2,40 mm



Note: blue marked in **tail length** is the preferred recommended standard for other special patterns or loadings, please check drawings, all other configurations on request only

Header, 5 row, power, straight, solder to board, wide body

FEATURES

- In accordance with IEC 60917 and IEC 61076-4-104 (Futurebus+)
- 5 x 2 power blades contacts
- 12 mm power modules are form- and fit interchangeable with signal modules on same footprint

TECHNICAL DATA

PHYSICAL

- spacing: 2,00 mm x 2,00 mm
- housing: glass-filled LCP (30% glass), colour natural
- flammability rating: UL 94 V-0
- contact material: phosphor bronze
- performance level: Telcordia CO

ELECTRICAL

- current rating: 3 A
- insulation resistance: $5 \times 10^3 \text{ M}\Omega$ initially, $1 \times 10^3 \text{ M}\Omega$ after tests
- withstanding voltage: 1000 V rms (sea level)

MECHANICAL PERFORMANCE

- insertion force: 1,50 N max. per individual power contact (mating)
- withdrawal force: 0,30 N max. per individual power contact (unmating)
- recommended hole diameter: 0,65-0,80 mm

ENVIRONMENTAL

- Operating temperature -55°C to + 125°C
- RoHs information, this product is compatible according to the European Union Directive 2002/95/IEC

PACKAGING

- Standard Tubes

PROCESSING INFORMATION

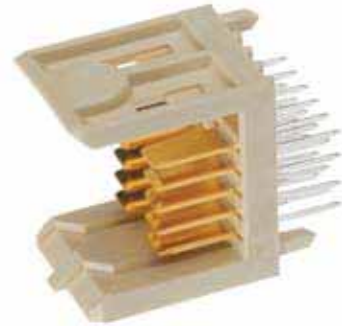
- Applicable process: wave, IR, vapor phase

REFERENCE DATA

- Product Specification GS-12-180
- Application Specification BUS-20-075

APPLICATION EQUIPMENT

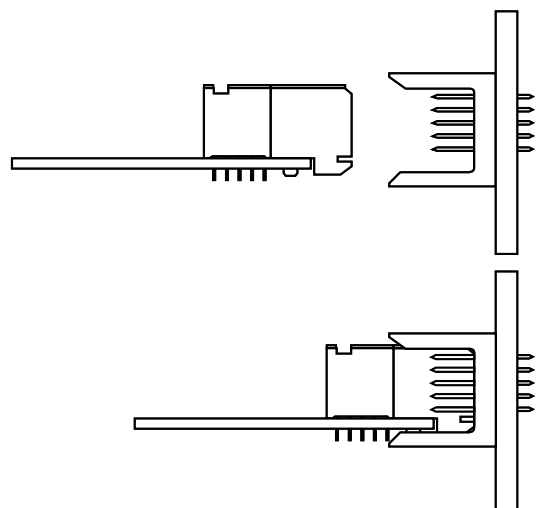
- for application equipment, check out the application equipment table on page 217-223



MATING DATA

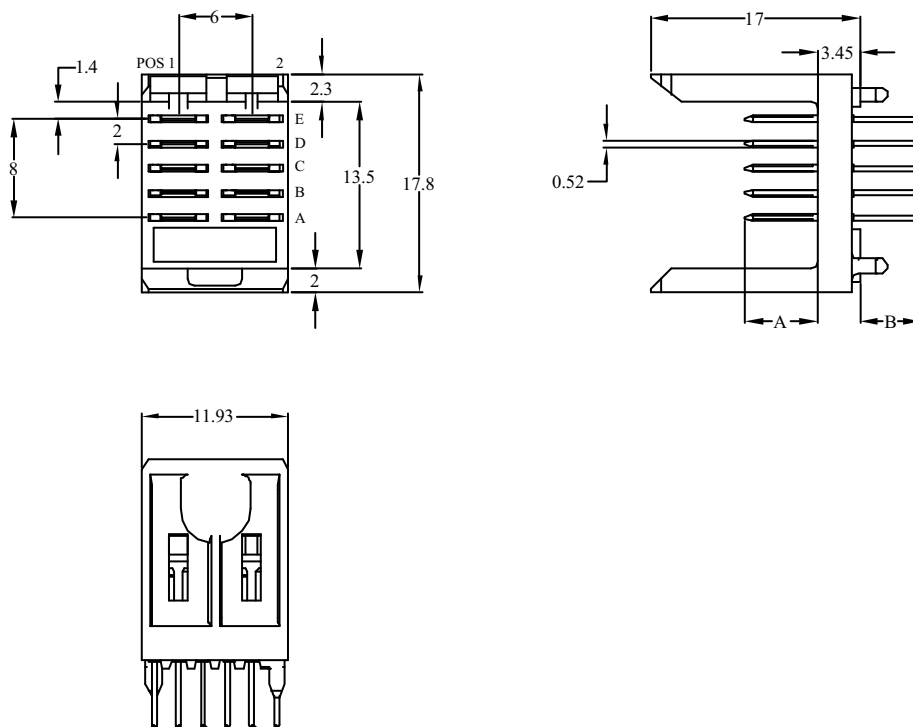
- Receptacle, right angle, press-fit, page 109
 - part number 85876-1yyLF
- Receptacle, right angle, solder-to-board, page 111
 - part number 89096-1yyLF
- Receptacle, right angle, Pin-in-Paste, page 113
 - part number 63793-101LF

TYPICAL APPLICATIONS



Header, 5 row, power, straight, solder to board, wide body

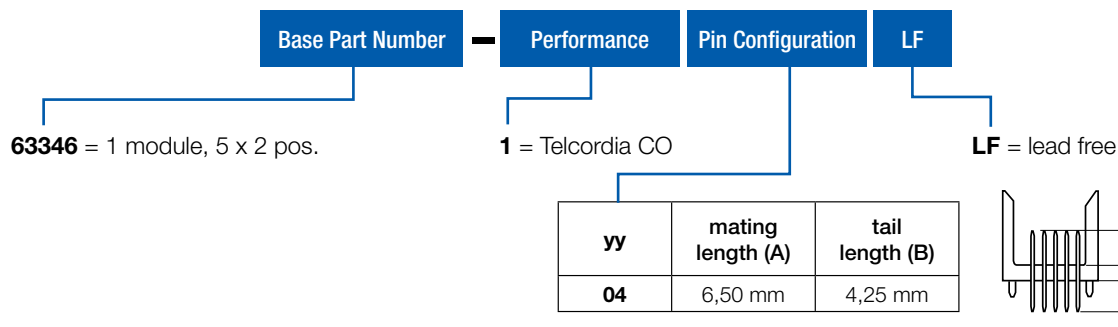
PRODUCT



PCB pattern P16, see chapter PCB layouts

PARTNUMBERS

63346 - 104LF



Note: for other special patterns or loadings, please check drawings, all other configurations on request only

Header, 5 row, power, straight, press-fit, wide body

FEATURES

- In accordance with IEC 60917 and IEC 61076-4-104 (Futurebus+)
- 5 x 2 power blades contacts
- 12 mm power modules are form- and fit interchangeable with signal modules on same footprint
- Eye the needle press-fit contac

TECHNICAL DATA

PHYSICAL

- spacing: 2,00 mm x 2,00 mm
- housing: glass-filled LCP (30% glass), colour natural
- flammability rating: UL 94 V-0
- contact material: phosphor bronze
- performance level: Telcordia CO

ELECTRICAL

- current rating: 3 A
- insulation resistance: 5x10³ MΩ initially, 1x10³ MΩ after tests
- withstanding voltage: 1000 V rms (sea level)

MECHANICAL PERFORMANCE

- insertion force: 1,50 N max. per individual power contact (mating)
- withdrawal force: 0,30 N max. per individual power contact (unmating)
- press-fit contact insertion: 65 N max. per pin
- press-fit pin withdrawal: 15 N min. per pin
- recommended hole diameter: 0,65-0,80 mm

ENVIRONMENTAL

- Operating temperature -55°C to + 125°C
- RoHs information, this product is compatible according to the European Union Directive 2002/95/IEC

PACKAGING

- Standard Tubes

PROCESSING INFORMATION

- Applicable process: press fit

REFERENCE DATA

- Product Specification GS-12-180
- Application Specification BUS-20-075

APPLICATION EQUIPMENT

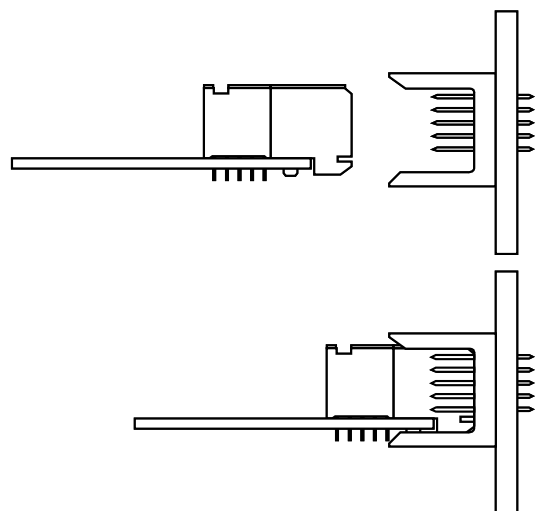
- for application equipment, check out the application equipment table on page 217-223



MATING DATA

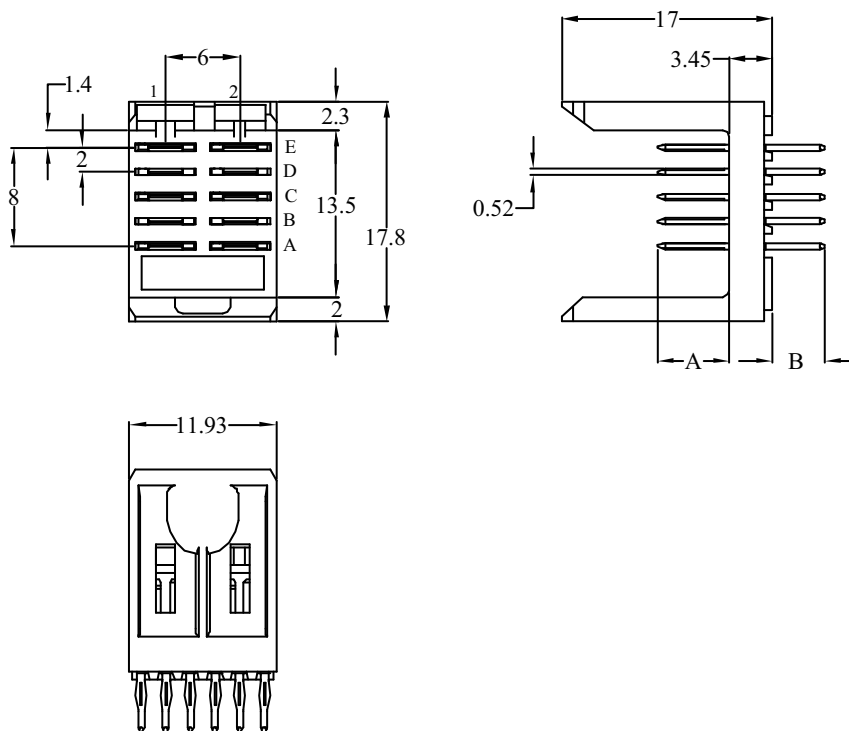
- Receptacle, right angle, press-fit, page 109
 - part number 85876-1yyLF
- Receptacle, right angle, solder-to-board, page 111
 - part number 89096-1yyLF
- Receptacle, right angle, Pin-in-Paste, page 113
 - part number 63793-101LF

TYPICAL APPLICATIONS



Header, 5 row, power, straight, press-fit, wide body

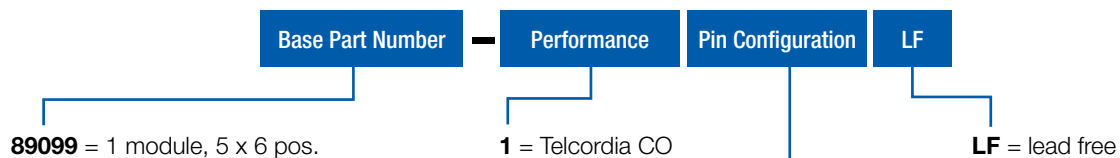
PRODUCT



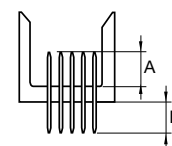
PCB pattern P7, see chapter PCB layouts

PARTNUMBERS

89099 - 111LF



yy	mating length (A)	tail length (B)
11	6,50 mm	4,30 mm



Note: for other special patterns or loadings, please check drawings, all other configurations on request only

Receptacle, 5 row, power, right angle, solder to board

FEATURES

- In accordance with IEC 60917 and IEC 61076-4-104 (Futurebus+)
- 5 x 2 dual beam power blades contacts
- 12 mm power modules are form- and fit interchangeable with signal modules on same footprint
- Modular design guarantees flexibility
- Stackable end-to-end without loss of position
- Stackable with other METRAL® function modules (power, I/O)

TECHNICAL DATA

PHYSICAL

- spacing: 2,00 mm x 2,00 mm
- housing: glass-filled LCP (30% glass), colour natural
- flammability rating: UL 94 V-0
- contact material: phosphor bronze
- performance level: Telcordia CO

ELECTRICAL

- current rating: 3 A
- insulation resistance: $5 \times 10^3 \text{ M}\Omega$ initially, $1 \times 10^3 \text{ M}\Omega$ after tests
- withstanding voltage: 1000 V rms (sea level)

MECHANICAL PERFORMANCE

- insertion force: 1,50 N max. per individual power contact (mating)
- withdrawal force: 0,30 N max. per individual power contact (unmating)
- press-fit contact insertion: 55 N max. per pin
- press-fit pin withdrawal: 15 N min. per pin
- recommended hole diameter: 0,65-0,80 mm

ENVIRONMENTAL

- Operating temperature -55°C to + 125°C
- RoHs information, this product is compatible according to the European Union Directive 2002/95/IEC

PACKAGING

- Standard Tubes

PROCESSING INFORMATION

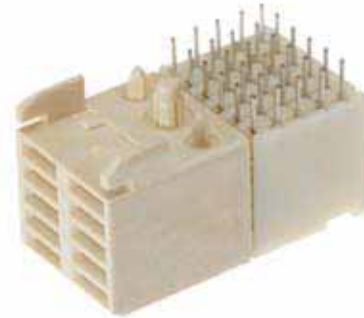
- Applicable process: wave, IR, vapor phase

REFERENCE DATA

- Product Specification GS-12-453

APPLICATION EQUIPMENT

- for application equipment, check out the application equipment table on page 217-223



MATING DATA

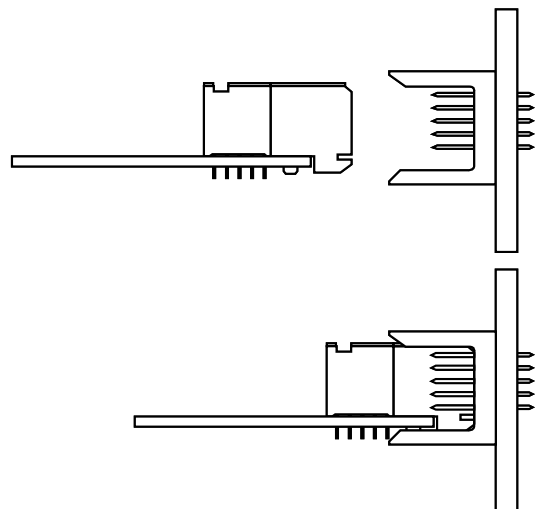
Header, straight, press-fit, page 107

- 1 module – part number 89099-111LF

Header, straight, solder-to-board, page 105

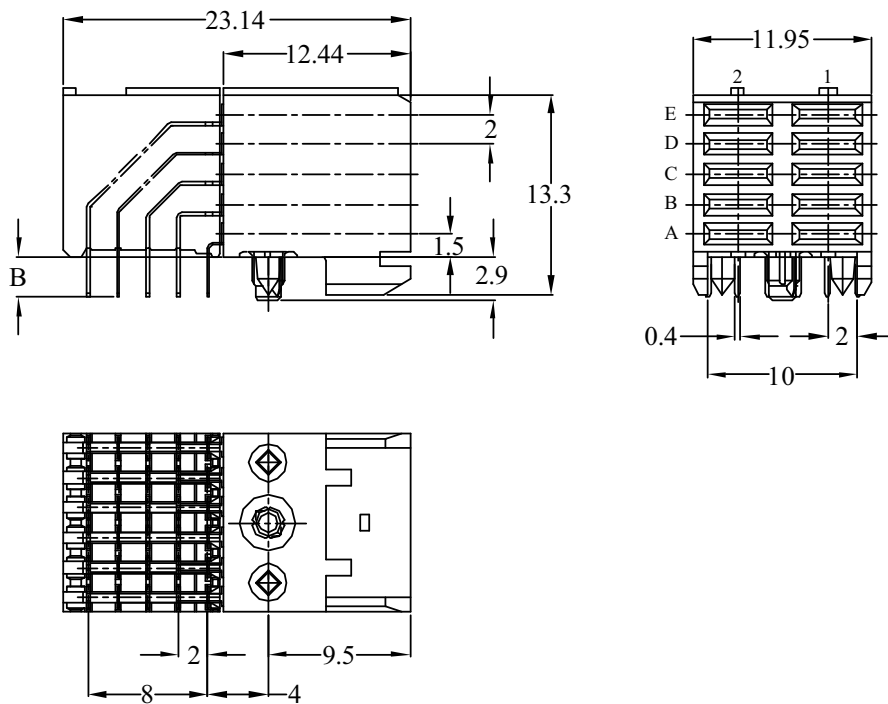
- 1 module – part number 63346-104LF

TYPICAL APPLICATIONS



Receptacle, 5 row, power, right angle, solder to board

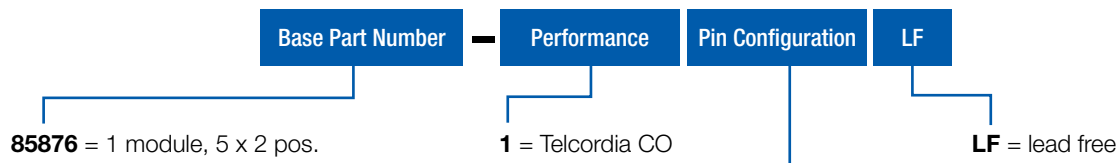
PRODUCT



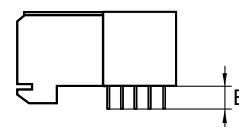
PCB pattern P2, see chapter PCB layouts

PARTNUMBERS

85876 - 1yyLF



yy	Tail length (B)	PCB Thickness
02	2,73 mm	1,60 mm
12	3,53	2,40



Note: blue marked in **tail length** is the preferred recommended standard for other special patterns or loadings, please check drawings, all other configurations on request only

Receptacle, 5 row, power, right angle, press-fit

FEATURES

- In accordance with IEC 60917 and IEC 61076-4-104 (Futurebus+)
- 5 x 2 dual beam power blades contacts
- 12 mm power modules are form- and fit interchangeable with signal modules on same footprint
- Modular design guarantees flexibility
- Stackable end-to-end without loss of position
- Stackable with other METRAL® function modules (power, I/O)
- Press block ensures accurate position of press-fit tails for easy mounting
- Eye the needle press-fit contact



TECHNICAL DATA

PHYSICAL

- spacing: 2,00 mm x 2,00 mm
- housing: glass-filled LCP (30% glass), colour natural
- flammability rating: UL 94 V-0
- contact material: phosphor bronze
- performance level: Telcordia CO

ELECTRICAL

- current rating: 3 A
- insulation resistance: $5 \times 10^3 \text{ M}\Omega$ initially, $1 \times 10^3 \text{ M}\Omega$ after tests
- withstanding voltage: 1000 V rms (sea level)

MECHANICAL PERFORMANCE

- insertion force: 1,50 N max. per individual power contact (mating)
- withdrawal force: 0,30 N max. per individual power contact (unmating)
- press-fit contact insertion: 55 N max. per pin
- press-fit pin withdrawal: 15 N min. per pin
- recommended hole diameter: 0,65-0,80 mm

ENVIRONMENTAL

- Operating temperature -55°C to + 125°C
- RoHs information, this product is compatible according to the European Union Directive 2002/95/IEC

PACKAGING

- Standard Tubes

PROCESSING INFORMATION

- Applicable process: press fit

REFERENCE DATA

- Press-peg application, TA-0941
- Product Specification GS-12-453

APPLICATION EQUIPMENT

- for application equipment, check out the application equipment table on page 217-223

MATING DATA

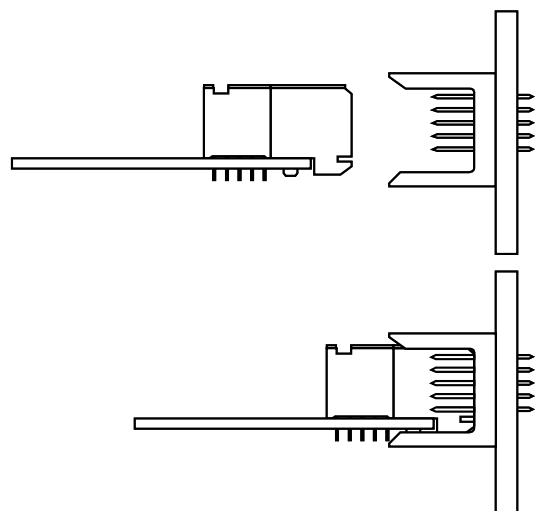
Header, straight, press-fit, page 107

- 1 module – part number 89099-111LF

Header, straight, solder-to-board, page 105

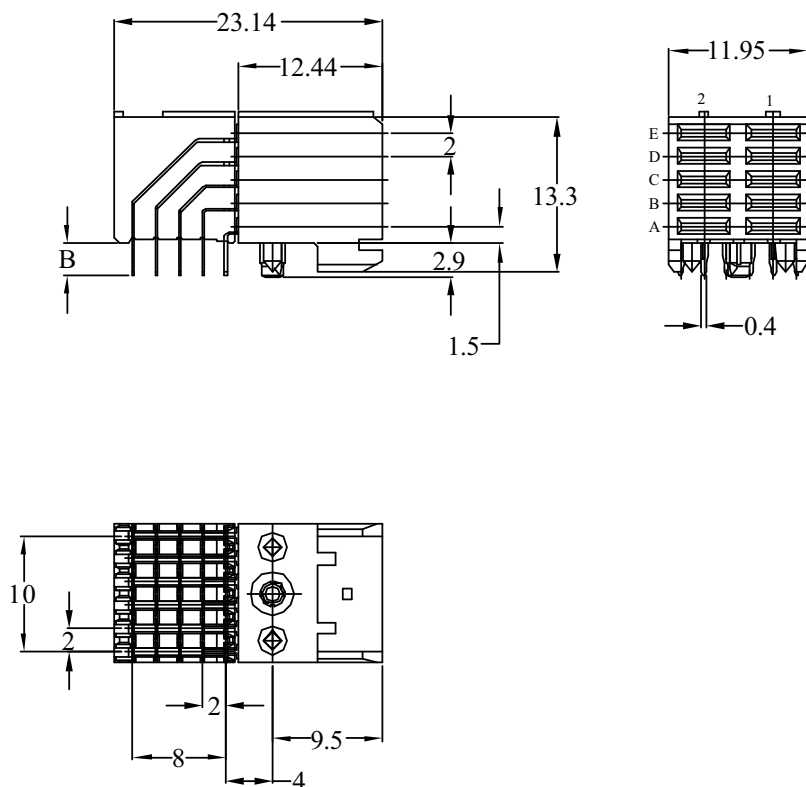
- 1 module – part number 63346-104LF

TYPICAL APPLICATIONS



Receptacle, 5 row, power, right angle, press-fit

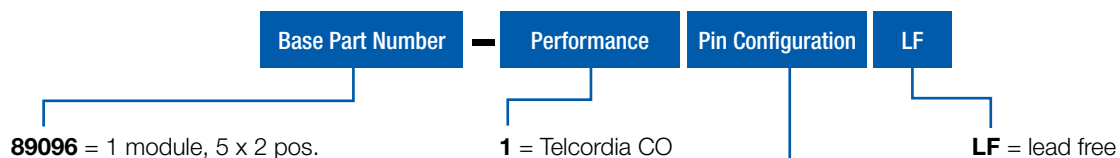
PRODUCT



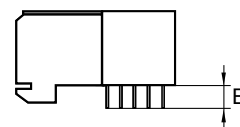
PCB pattern P2, see chapter PCB layouts

PARTNUMBERS

89096 - 1yyLF



yy	Tail length (B)	PCB Thickness
02	2,73 mm	1,60 mm
12	3,53 mm	2,40 mm



Note: blue marked in **tail length** is the preferred recommended standard for other special patterns or loadings, please check drawings, all other configurations on request only

Receptacle, 5 row, power, right angle, pin-in-paste

FEATURES

- In accordance with IEC 60917 and IEC 61076-4-104 (Futurebus+)
- 5 x 2 dual beam power blades contacts
- 12 mm power modules are form- and fit interchangeable with signal modules on same footprint
- Modular design guarantees flexibility
- Stackable end-to-end without loss of position
- Stackable with other METRAL® function modules (power, I/O)

TECHNICAL DATA

PHYSICAL

- spacing: 2,00 mm x 2,00 mm
- housing: glass-filled LCP (30% glass), colour natural
- flammability rating: UL 94 V-0
- contact material: phosphor bronze
- performance level: Telcordia CO

ELECTRICAL

- current rating: 3 A
- insulation resistance: $5 \times 10^3 \text{ M}\Omega$ initially, $1 \times 10^3 \text{ M}\Omega$ after tests
- withstanding voltage: 1000 V rms (sea level)

MECHANICAL PERFORMANCE

- insertion force: 1,50 N max. per individual power contact (mating)
- withdrawal force: 0,30 N max. per individual power contact (unmating)
- recommended hole diameter: 0,65-0,80 mm

ENVIRONMENTAL

- Operating temperature -55°C to + 125°C
- RoHs information, this product is compatible according to the European Union Directive 2002/95/IEC

PACKAGING

- Standard Tubes

PROCESSING INFORMATION

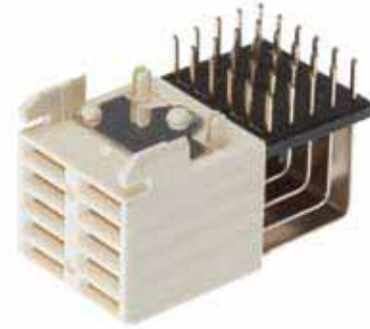
- automatic Surface-mount reflow process, resistance for Lead Free reflow temperature

REFERENCE DATA

- Packaging specification GS-14-920
- Product Specification GS-12-453

APPLICATION EQUIPMENT

- for application equipment, check out the application equipment table on page 217-223



MATING DATA

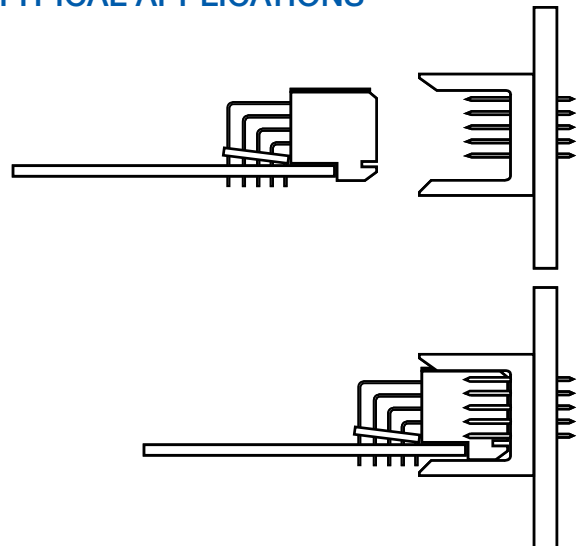
Header, straight, press-fit, page 107

- 1 module – part number 89099-111LF

Header, straight, solder-to-board, page 105

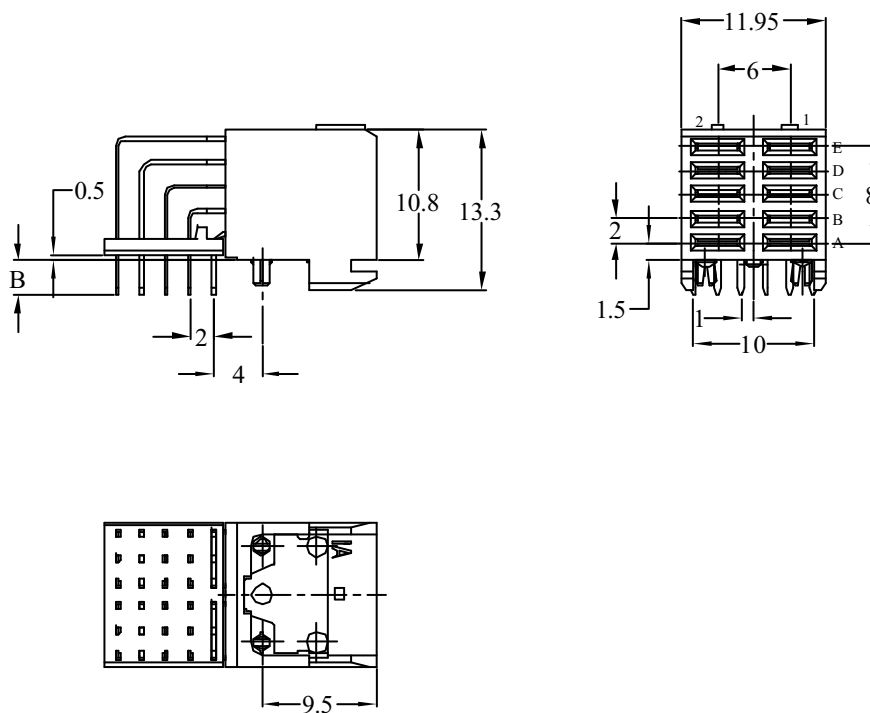
- 1 module – part number 63346-104LF

TYPICAL APPLICATIONS



Receptacle, 5 row, power, right angle, pin-in-paste

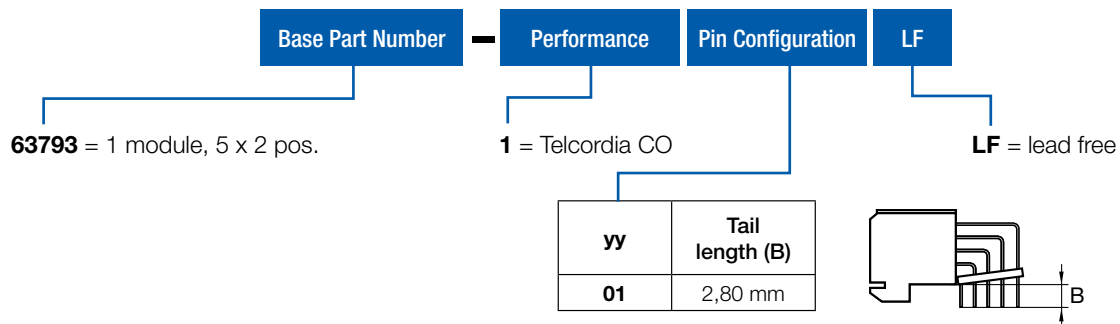
PRODUCT



PCB pattern P2, see chapter PCB layouts

PARTNUMBERS






63793 - 101LF



Note: for other special patterns or loadings, please check drawings, all other configurations on request only



METRAL® POWER CONNECTORS REVERSED

-  Header, 4 row, right angle, wide body
-  Header, 4 row, right angle, narrow body
-  Receptacle, 4 row, straight
-  Header, 5 row, right angle, wide body
-  Receptacle, 5 row, straight

Header, 4 row, power, right angle, solder to board, wide body

FEATURES

- In accordance with IEC 60917 and IEC 61076-4-104 (Futurebus+)
- 4 x 2 power blades contacts
- 12 mm power modules are form- and fit interchangeable with signal modules on same footprint

TECHNICAL DATA

PHYSICAL

- spacing: 2,00 mm x 2,00 mm
- housing: glass-filled LCP (30% glass), colour natural
- flammability rating: UL 94 V-0
- contact material: phosphor bronze
- performance level: Telcordia CO

ELECTRICAL

- current rating: 3 A
- insulation resistance: $5 \times 10^3 \text{ M}\Omega$ initially, $1 \times 10^3 \text{ M}\Omega$ after tests
- withstanding voltage: 1000 V rms (sea level)

MECHANICAL PERFORMANCE

- insertion force: 1,50 N max. per individual power contact (mating)
- withdrawal force: 0,30 N max. per individual power contact (unmating)
- recommended hole diameter: 0,65-0,80 mm

ENVIRONMENTAL

- Operating temperature -55°C to $+125^\circ\text{C}$
- RoHs information, this product is compatible according to the European Union Directive 2002/95/IEC

PACKAGING

- Standard Tubes

PROCESSING INFORMATION

- Applicable process: wave, IR, vapor phase

REFERENCE DATA

- Product specification: GS-12-446
- Application Specification BUS-20-075

APPLICATION EQUIPMENT

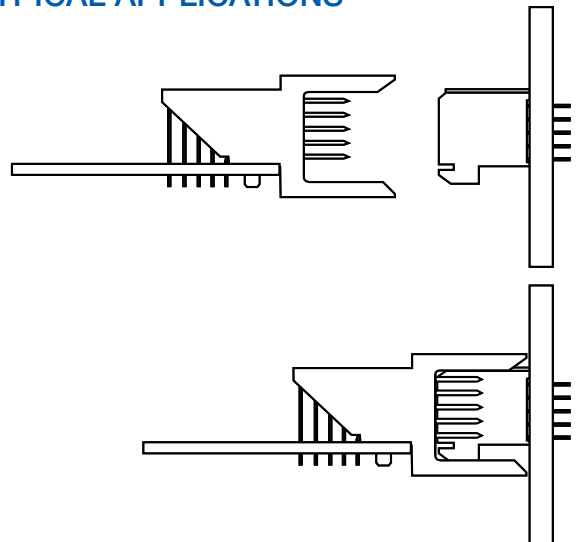
- for application equipment, check out the application equipment table on page 217-223



MATING DATA

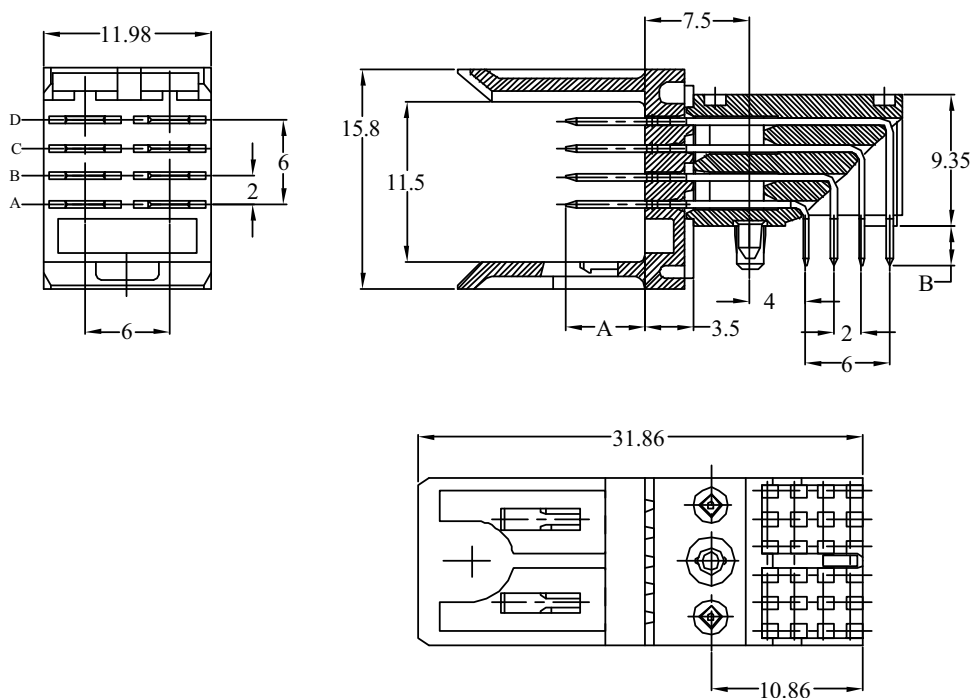
- Receptacle, straight, solder-to-board, page 123
- part number 85968-101LF

TYPICAL APPLICATIONS



Header, 4 row, power, right angle, solder to board, wide body

PRODUCT



PCB pattern P1, see chapter PCB layouts

PARTNUMBERS

HM1K4 1 DAP000H6PLF

Base Part Number	Type	no. of rows	no. of pos.	Configuration	000	Performance	Packaging	LF						
HM1	K = power header right angle	4 = 4 row	1 = 1 module (4 x 2 pos.)	DAP = solder to board <table border="1"> <thead> <tr> <th>mating length (A)</th> <th>tail length (B)</th> </tr> </thead> <tbody> <tr> <td>6,50 mm</td> <td>2,90 mm</td> </tr> <tr> <td colspan="2">1,6 mm PCB thickness</td> </tr> </tbody> </table>	mating length (A)	tail length (B)	6,50 mm	2,90 mm	1,6 mm PCB thickness			H6 = Telcordia CO	P = trays	LF = lead free
mating length (A)	tail length (B)													
6,50 mm	2,90 mm													
1,6 mm PCB thickness														

Note: for other special patterns or loadings, please check drawings, all other configurations on request only

Header, 4 row, power, right angle, press-fit, wide body

FEATURES

- In accordance with IEC 60917 and IEC 61076-4-104 (Futurebus+)
- 4 x 2 power blades contacts
- 12 mm power modules are form- and fit interchangeable with signal modules on same footprint
- Eye the needle press-fit contact

TECHNICAL DATA

PHYSICAL

- spacing: 2,00 mm x 2,00 mm
- housing: glass-filled LCP (30% glass), colour natural
- flammability rating: UL 94 V-0
- contact material: phosphor bronze
- performance level: Telcordia CO

ELECTRICAL

- current rating: 3 A
- insulation resistance: $5 \times 10^3 \text{ M}\Omega$ initially, $1 \times 10^3 \text{ M}\Omega$ after tests
- withstanding voltage: 1000 V rms (sea level)

MECHANICAL PERFORMANCE

- insertion force: 1,50 N max. per individual power contact (mating)
- withdrawal force: 0,30 N max. per individual power contact (unmating)
- press-fit contact insertion: 55 N max. per pin
- press-fit pin withdrawal: 15 N min. per pin
- recommended hole diameter: 0,65-0,80 mm

ENVIRONMENTAL

- Operating temperature -55°C to + 125°C
- RoHs information, this product is compatible according to the European Union Directive 2002/95/IEC

PACKAGING

- Trays

PROCESSING INFORMATION

- Applicable process: press fit

REFERENCE DATA

- Product specification: GS-12-445
- Application Specification BUS-20-075

APPLICATION EQUIPMENT

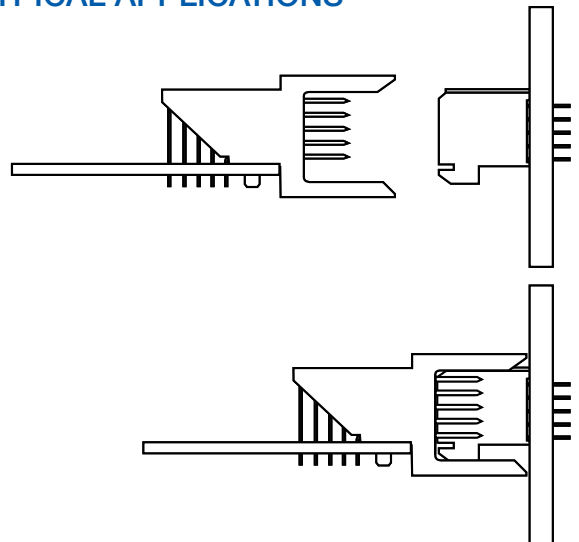
- for application equipment, check out the application equipment table on page 217-223



MATING DATA

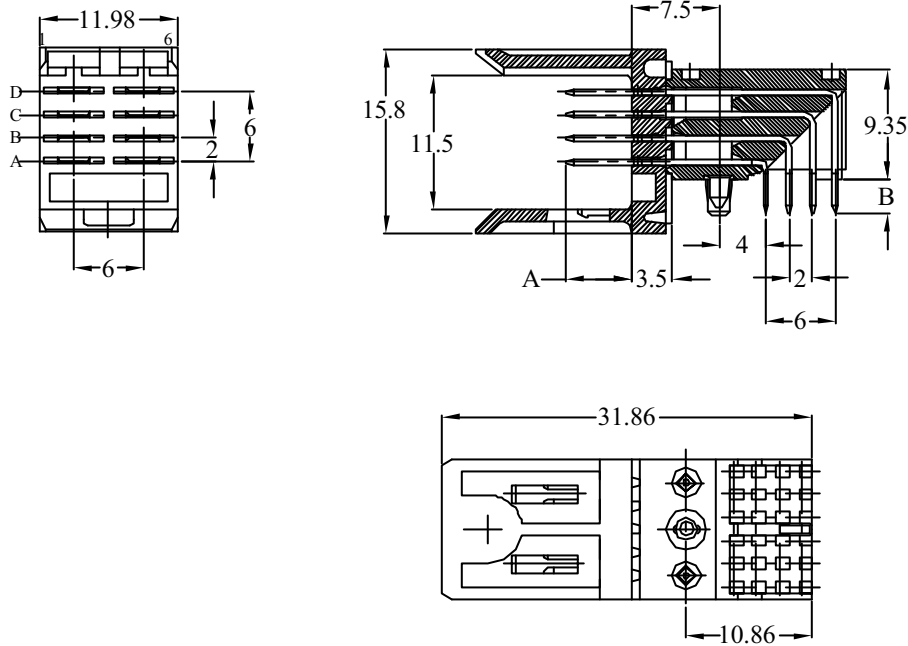
- Receptacle, straight, solder-to-board, page 123
- part number 85968-101LF

TYPICAL APPLICATIONS



Header, 4 row, power, right angle, press-fit, wide body

PRODUCT



PCB pattern P1, see chapter PCB layouts

PARTNUMBERS

HM1K4 1 DDP000H6PLF

Base Part Number	Type	no. of rows	no. of pos.	Configuration	000	Performance	Packaging	LF						
HM1	K = power header right angle	4 = 4 row	1 = 1 module (4 x 2 pos.)	DDP = press fit		H6 = Telcordia CO	P = trays	LF = lead free						
				<table border="1"> <thead> <tr> <th>mating length (A)</th> <th>tail length (B)</th> </tr> </thead> <tbody> <tr> <td>6,50 mm</td> <td>2,90 mm</td> </tr> <tr> <td colspan="2">1,6 mm PCB thickness</td> </tr> </tbody> </table>	mating length (A)	tail length (B)	6,50 mm	2,90 mm	1,6 mm PCB thickness					
mating length (A)	tail length (B)													
6,50 mm	2,90 mm													
1,6 mm PCB thickness														

Note: for other special patterns or loadings, please check drawings, all other configurations on request only

Header, 4 row, power, right angle, pin-in-paste, wide body

FEATURES

- In accordance with IEC 60917 and IEC 61076-4-104 (Futurebus+)
- 4 x 2 power blades contacts
- 12 mm power modules are form- and fit interchangeable with signal modules on same footprint

TECHNICAL DATA

PHYSICAL

- spacing: 2,00 mm x 2,00 mm
- housing: glass-filled LCP (30% glass), colour natural
- flammability rating: UL 94 V-0
- contact material: phosphor bronze
- performance level: Telcordia CO

ELECTRICAL

- current rating: 3 A
- insulation resistance: $5 \times 10^3 \text{ M}\Omega$ initially, $1 \times 10^3 \text{ M}\Omega$ after tests
- withstanding voltage: 1000 V rms (sea level)

MECHANICAL PERFORMANCE

- insertion force: 1,50 N max. per individual power contact (mating)
- withdrawal force: 0,30 N max. per individual power contact (unmating)
- recommended hole diameter: 0,65-0,80 mm

ENVIRONMENTAL

- Operating temperature -55°C to $+125^\circ\text{C}$
- RoHs information, this product is compatible according to the European Union Directive 2002/95/IEC

PACKAGING

- Trays

PROCESSING INFORMATION

- Pick&place by vacuum nozzle or mechanical gripper
- automatic Surface-mount reflow process, resistance for Lead Free reflow temperature

REFERENCE DATA

- Product specification: GS-12-446
- Application Specification BUS-20-075

APPLICATION EQUIPMENT

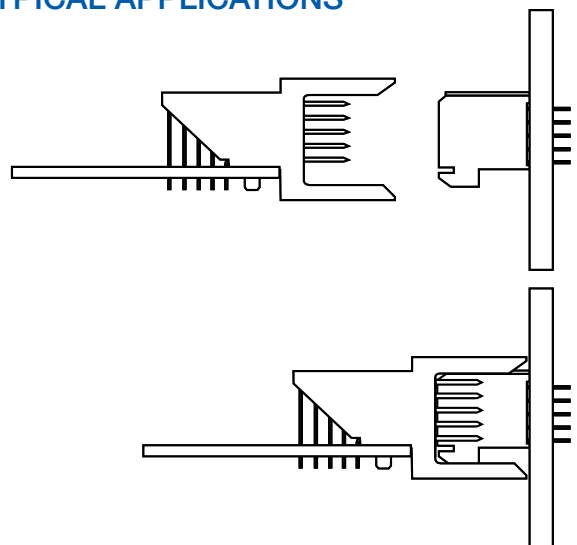
- for application equipment, check out the application equipment table on page 217-223



MATING DATA

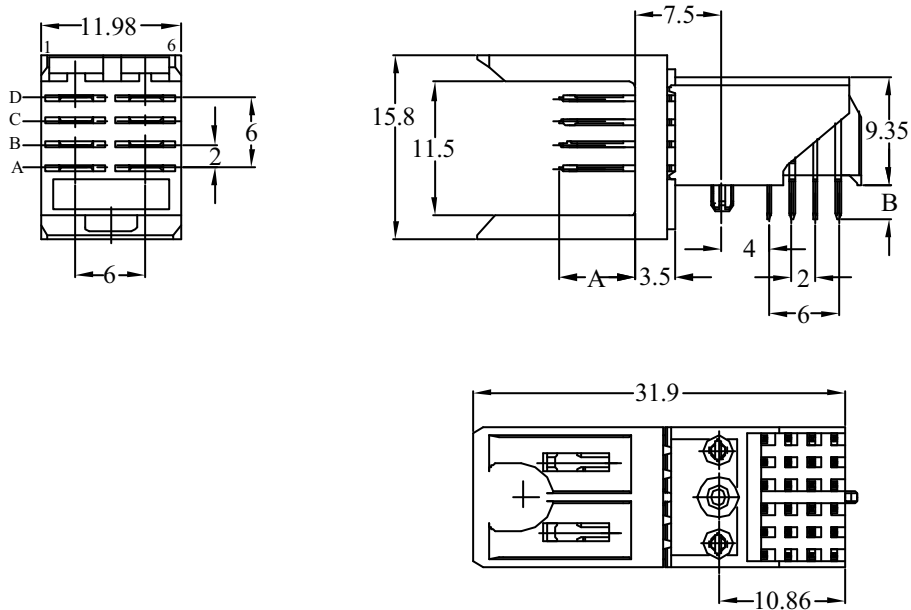
- Receptacle, straight, solder-to-board, page 123
- part number 85968-101LF

TYPICAL APPLICATIONS



Header, 4 row, power, right angle, pin-in-paste, wide body

PRODUCT

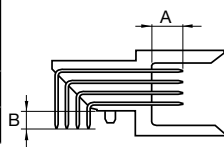


PCB pattern P1, see chapter PCB layouts

PARTNUMBERS

HM1K4 1 DFP000H6PLF

Base Part Number	Type	no. of rows	no. of pos.	Configuration	000	Performance	Packaging	LF						
HM1	K = power header right angle	4 = 4 row	1 = 1 module (4 x 2 pos.)	DFP = Pin-in-Paste		H6 = Telcordia CO	P = trays	LF = lead free						
				<table border="1"> <thead> <tr> <th>mating length (A)</th> <th>tail length (B)</th> </tr> </thead> <tbody> <tr> <td>6,50 mm</td> <td>2,90 mm</td> </tr> <tr> <td colspan="2">1,6 mm PCB thickness</td> </tr> </tbody> </table>	mating length (A)	tail length (B)	6,50 mm	2,90 mm	1,6 mm PCB thickness					
mating length (A)	tail length (B)													
6,50 mm	2,90 mm													
1,6 mm PCB thickness														



Note: for other special patterns or loadings, please check drawings, all other configurations on request only

Receptacle, 4 row, power, straight, solder to board

FEATURES

- In accordance with IEC 60917 and IEC 61076-4-104 (Futurebus+)
- 4 x 2 dual beam power blades contacts
- 12 mm power modules are form- and fit interchangeable with signal modules on same footprint
- Modular design guarantees flexibility
- Stackable end-to-end without loss of position
- Stackable with other METRAL® function modules (power, I/O)

TECHNICAL DATA

PHYSICAL

- spacing: 2,00 mm x 2,00 mm
- housing: glass-filled LCP (30% glass), colour natural
- flammability rating: UL 94 V-0
- contact material: phosphor bronze
- performance level: Telcordia CO

ELECTRICAL

- current rating: 3 A
- insulation resistance: $5 \times 10^3 \text{ M}\Omega$ initially, $1 \times 10^3 \text{ M}\Omega$ after tests
- withstanding voltage: 1000 V rms (sea level)

MECHANICAL PERFORMANCE

- insertion force: 1,50 N max. per individual power contact (mating)
- withdrawal force: 0,30 N max. per individual power contact (unmating)
- recommended hole diameter: 0,65-0,80 mm

ENVIRONMENTAL

- Operating temperature -55°C to $+125^\circ\text{C}$
- RoHs information, this product is compatible according to the European Union Directive 2002/95/IEC

PACKAGING

- Trays

PROCESSING INFORMATION

- Applicable process: wave, IR, vapor phase

REFERENCE DATA

- Product Specification GS-12-453

APPLICATION EQUIPMENT

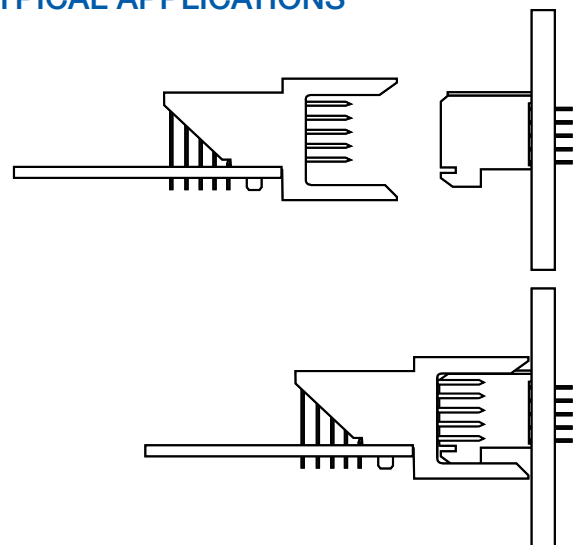
- for application equipment, check out the application equipment table on page 217-223



MATING DATA

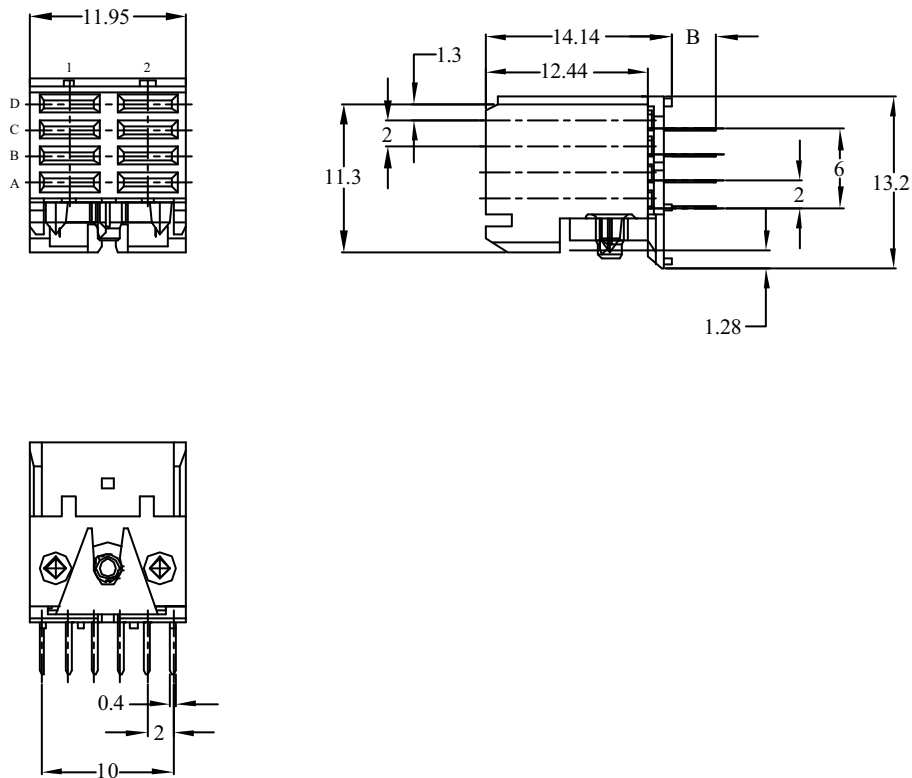
- Header, right angle, press-fit, page 119
 - part number HM1K41DDP000H6PLF
- Header, right angle, solder-to-board, page 117
 - part number HM1K41DAP000H6PLF
- Header, right angle, Pin-in-Paste, page 121
 - part number HM1K41DFP000H6PLF

TYPICAL APPLICATIONS



Receptacle, 4 row, power, straight, solder to board

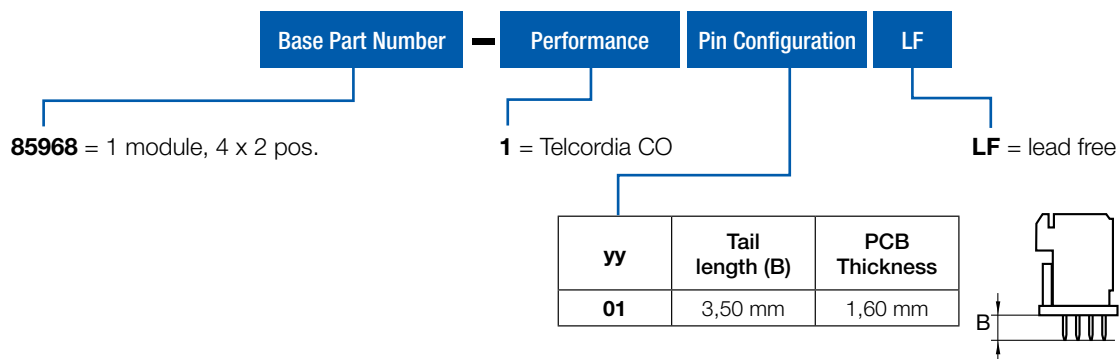
PRODUCT



PCB pattern P5, see chapter PCB layouts

PARTNUMBERS

85968 - 101LF



Note: for other special patterns or loadings, please check drawings, all other configurations on request only

Header, 5 row, power, right angle, solder to board, wide body

FEATURES

- In accordance with IEC 60917 and IEC 61076-4-104 (Futurebus+)
- 5 x 2 power blades contacts
- 12 mm power modules are form- and fit interchangeable with signal modules on same footprint

TECHNICAL DATA

PHYSICAL

- spacing: 2,00 mm x 2,00 mm
- housing: glass-filled LCP (30% glass), colour natural
- flammability rating: UL 94 V-0
- contact material: phosphor bronze
- performance level: Telcordia CO

ELECTRICAL

- current rating: 3 A
- insulation resistance: $5 \times 10^3 \text{ M}\Omega$ initially, $1 \times 10^3 \text{ M}\Omega$ after tests
- withstanding voltage: 1000 V rms (sea level)

MECHANICAL PERFORMANCE

- insertion force: 1,50 N max. per individual power contact (mating)
- withdrawal force: 0,30 N max. per individual power contact (unmating)
- recommended hole diameter: 0,65-0,80 mm

ENVIRONMENTAL

- Operating temperature -55°C to $+125^\circ\text{C}$
- RoHs information, this product is compatible according to the European Union Directive 2002/95/IEC

PACKAGING

- Trays

PROCESSING INFORMATION

- Applicable process: wave, IR, vapor phase

REFERENCE DATA

- Product specification: GS-12-446
- Application Specification BUS-20-075

APPLICATION EQUIPMENT

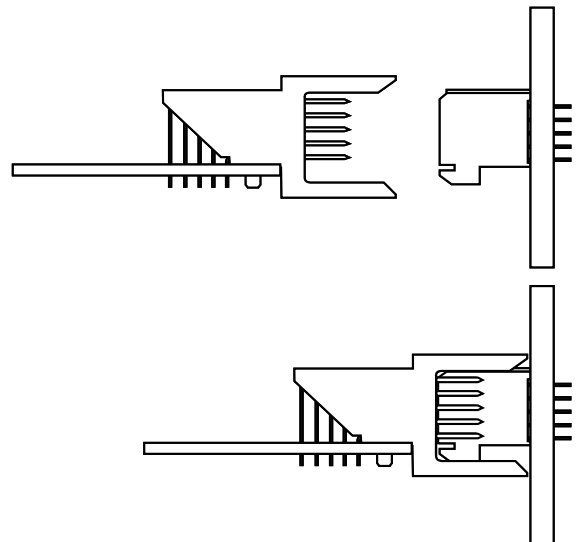
- for application equipment, check out the application equipment table on page 217-223



MATING DATA

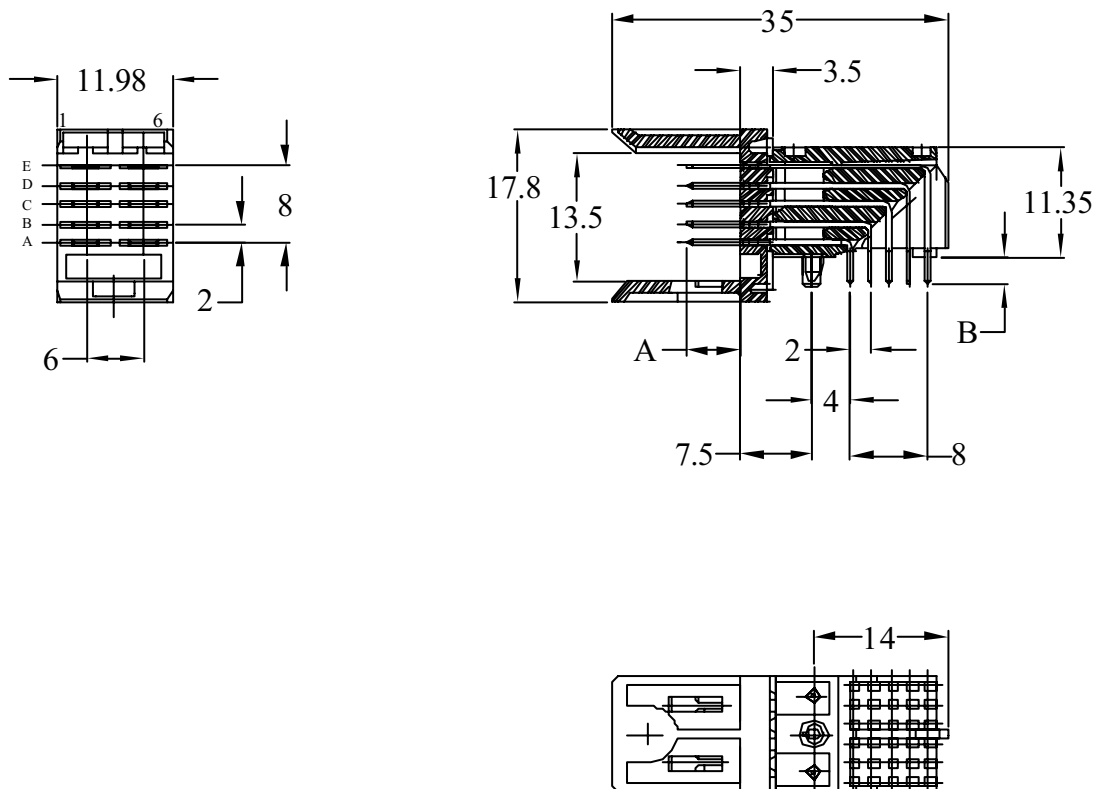
- Receptacle, straight, solder-to-board, page 131
- part number 94561-112LF

TYPICAL APPLICATIONS



Header, 5 row, power, right angle, solder to board, wide body

PRODUCT



PCB pattern P2, see chapter PCB layouts

PARTNUMBERS

HM1K5 1 DAP000H6PLF

Base Part Number	Type	no. of rows	no. of pos.	Configuration	000	Performance	Packaging	LF						
HM1	K = power header right angle	5 = 5 row	1 = 1 module (5 x 2 pos.)	DAP = solder to board <table border="1"> <thead> <tr> <th>mating length (A)</th> <th>tail length (B)</th> </tr> </thead> <tbody> <tr> <td>6,50 mm</td> <td>2,90 mm</td> </tr> <tr> <td colspan="2">1,6 mm PCB thickness</td> </tr> </tbody> </table>	mating length (A)	tail length (B)	6,50 mm	2,90 mm	1,6 mm PCB thickness			H6 = Telcordia CO	P = trays	LF = lead free
mating length (A)	tail length (B)													
6,50 mm	2,90 mm													
1,6 mm PCB thickness														

Note: for other special patterns or loadings, please check drawings, all other configurations on request only

Header, 5 row, power, right angle, press-fit, wide body

FEATURES

- In accordance with IEC 60917 and IEC 61076-4-104 (Futurebus+)
- 5 x 2 power blades contacts
- 12 mm power modules are form- and fit interchangeable with signal modules on same footprint
- Eye the needle press-fit contact

TECHNICAL DATA

PHYSICAL

- spacing: 2,00 mm x 2,00 mm
- housing: glass-filled LCP (30% glass), colour natural
- flammability rating: UL 94 V-0
- contact material: phosphor bronze
- performance level: Telcordia CO

ELECTRICAL

- current rating: 3 A
- insulation resistance: $5 \times 10^3 \text{ M}\Omega$ initially, $1 \times 10^3 \text{ M}\Omega$ after tests
- withstanding voltage: 1000 V rms (sea level)

MECHANICAL PERFORMANCE

- insertion force: 1,50 N max. per individual power contact (mating)
- withdrawal force: 0,30 N max. per individual power contact (unmating)
- press-fit contact insertion: 55 N max. per pin
- press-fit pin withdrawal: 15 N min. per pin
- recommended hole diameter: 0,65-0,80 mm

ENVIRONMENTAL

- Operating temperature -55°C to + 125°C
- RoHs information, this product is compatible according to the European Union Directive 2002/95/IEC

PACKAGING

- Trays

PROCESSING INFORMATION

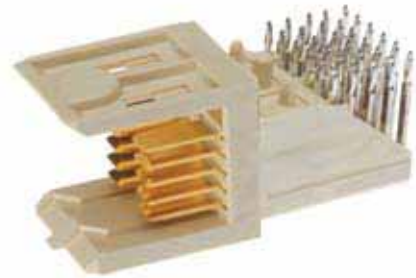
- Applicable process: press fit

REFERENCE DATA

- Product specification: GS-12-445
- Application Specification BUS-20-075

APPLICATION EQUIPMENT

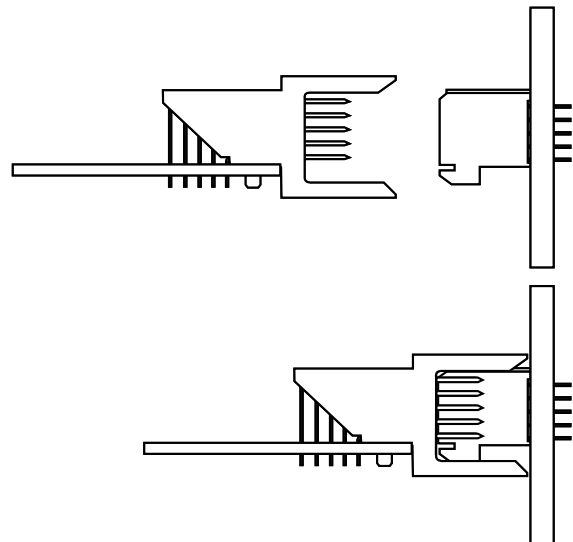
- for application equipment, check out the application equipment table on page 217-223



MATING DATA

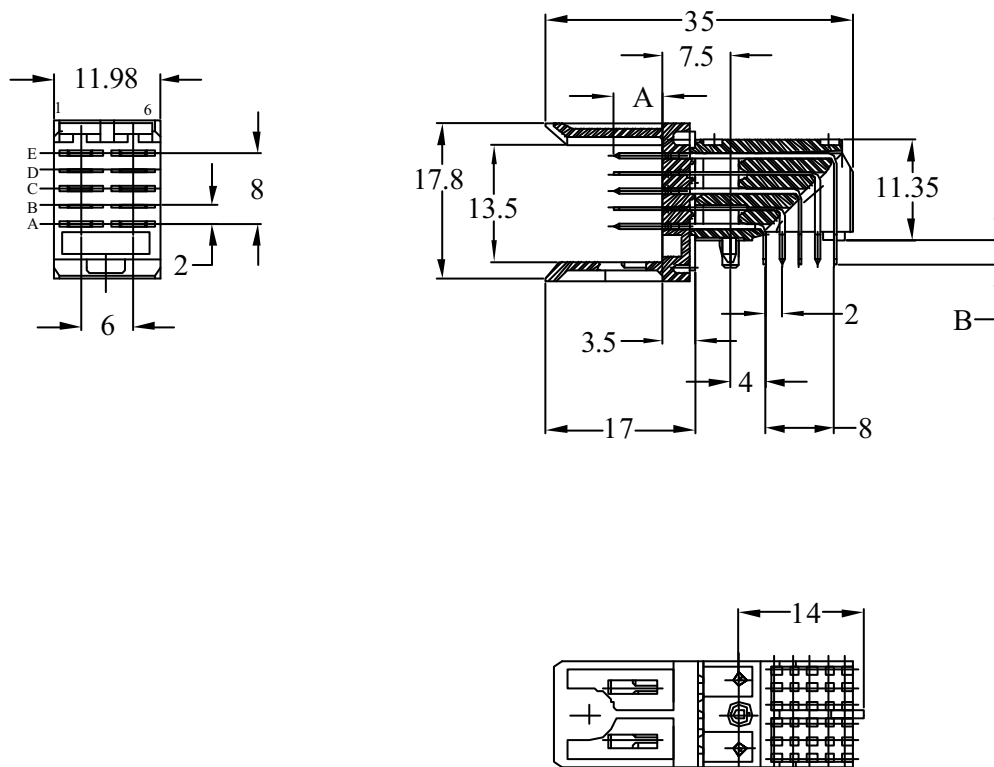
- Receptacle, straight, solder-to-board, page 131
- part number 94561-112LF

TYPICAL APPLICATIONS



Header, 5 row, power, right angle, press-fit, wide body

PRODUCT



PCB pattern P2, see chapter PCB layouts

PARTNUMBERS

HM1K5 1 DDP000H6PLF

Base Part Number	Type	no. of rows	no. of pos.	Configuration	000	Performance	Packaging	LF
HM1	K = power header right angle	5 = 5 row	1 = 1 module (5 x 2 pos.)	DDP = press fit		H6 = Telcordia CO	P = trays	LF = lead free

mating length (A)	tail length (B)
6,50 mm	2,90 mm
1,6 mm PCB thickness	

Note: for other special patterns or loadings, please check drawings, all other configurations on request only

Header, 5 row, power, right angle, pin-in-paste, wide body

FEATURES

- In accordance with IEC 60917 and IEC 61076-4-104 (Futurebus+)
- 5 x 2 power blades contacts
- 12 mm power modules are form- and fit interchangeable with signal modules on same footprint

TECHNICAL DATA

PHYSICAL

- spacing: 2,00 mm x 2,00 mm
- housing: glass-filled LCP (30% glass), colour natural
- flammability rating: UL 94 V-0
- contact material: phosphor bronze
- performance level: Telcordia CO

ELECTRICAL

- current rating: 3 A
- insulation resistance: $5 \times 10^3 \text{ M}\Omega$ initially, $1 \times 10^3 \text{ M}\Omega$ after tests
- withstanding voltage: 1000 V rms (sea level)

MECHANICAL PERFORMANCE

- insertion force: 1,50 N max. per individual power contact (mating)
- withdrawal force: 0,30 N max. per individual power contact (unmating)
- recommended hole diameter: 0,65-0,80 mm

ENVIRONMENTAL

- Operating temperature -55°C to + 125°C
- RoHs information, this product is compatible according to the European Union Directive 2002/95/IEC

PACKAGING

- Trays

PROCESSING INFORMATION

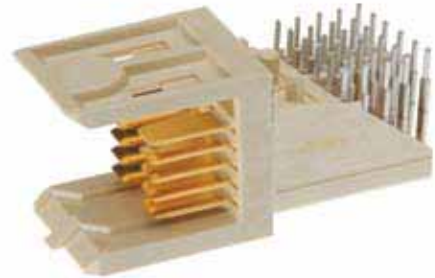
- Pick&place by vacuum nozzle or mechanical gripper
- automatic Surface-mount reflow process, resistance for Lead Free reflow temperature

REFERENCE DATA

- Product specification: GS-12-446
- Application Specification BUS-20-075

APPLICATION EQUIPMENT

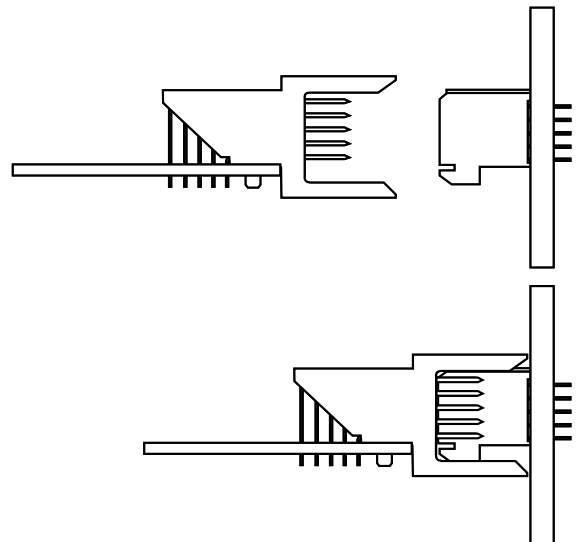
- for application equipment, check out the application equipment table on page 217-223



MATING DATA

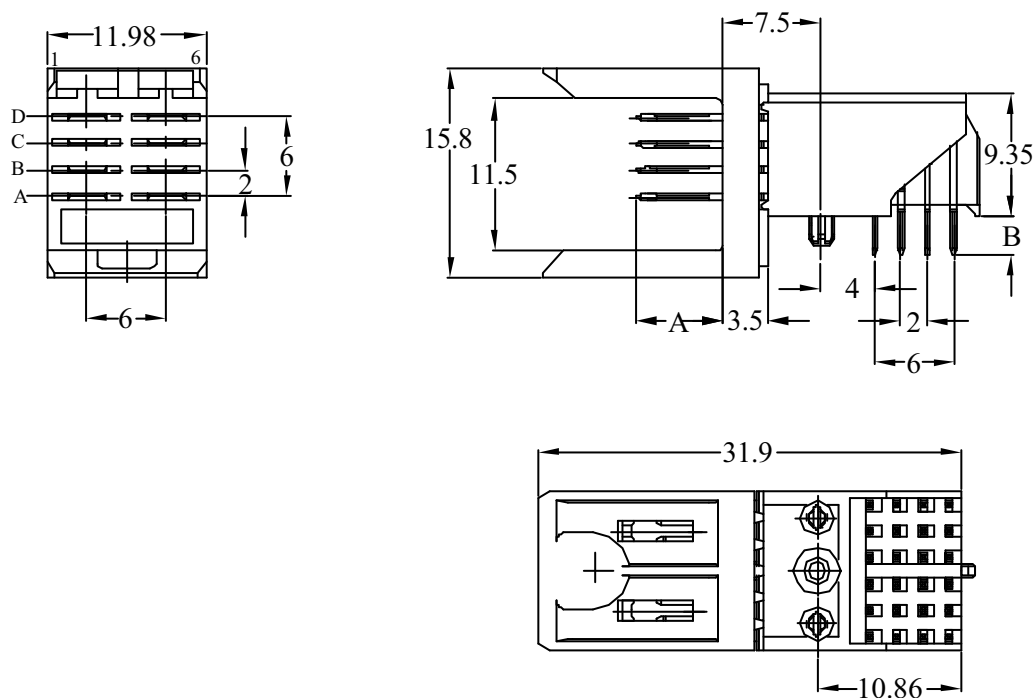
- Receptacle, straight, solder-to-board, page 131
- part number 94561-112LF

TYPICAL APPLICATIONS



Header, 5 row, power, right angle, pin-in-paste, wide body

PRODUCT

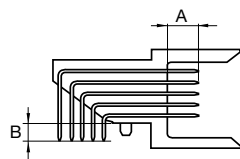


PCB pattern P2, see chapter PCB layouts

PARTNUMBERS

HM1K5 1 DFP000H6PLF

Base Part Number	Type	no. of rows	no. of pos.	Configuration	000	Performance	Packaging	LF						
HM1	K = power header right angle	5 = 5 row	1 = 1 module (5 x 2 pos.)	DFP = Pin-in-Paste <table border="1"> <thead> <tr> <th>mating length (A)</th> <th>tail length (B)</th> </tr> </thead> <tbody> <tr> <td>6,50 mm</td> <td>2,90 mm</td> </tr> <tr> <td colspan="2">1,6 mm PCB thickness</td> </tr> </tbody> </table>	mating length (A)	tail length (B)	6,50 mm	2,90 mm	1,6 mm PCB thickness			H6 = Telcordia CO	P = trays	LF = lead free
mating length (A)	tail length (B)													
6,50 mm	2,90 mm													
1,6 mm PCB thickness														



Note: for other special patterns or loadings, please check drawings, all other configurations on request only

Receptacle, 5 row, power, straight, solder to board

FEATURES

- In accordance with IEC 60917 and IEC 61076-4-104 (Futurebus+)
- 5 x 2 dual beam power blades contacts
- 12 mm power modules are form- and fit interchangeable with signal modules on same footprint
- Modular design guarantees flexibility
- Stackable end-to-end without loss of position
- Stackable with other METRAL® function modules (power, I/O)

TECHNICAL DATA

PHYSICAL

- spacing: 2,00 mm x 2,00 mm
- housing: glass-filled LCP (30% glass), colour natural
- flammability rating: UL 94 V-0
- contact material: phosphor bronze
- performance level: Telcordia CO

ELECTRICAL

- current rating: 3 A
- insulation resistance: 5x10³ MΩ initially, 1x10³ MΩ after tests
- withstanding voltage: 1000 V rms (sea level)

MECHANICAL PERFORMANCE

- insertion force: 1,50 N max. per individual power contact (mating)
- withdrawal force: 0,30 N max. per individual power contact (unmating)
- recommended hole diameter: 0,65-0,80 mm

ENVIRONMENTAL

- Operating temperature -55°C to + 125°C
- RoHs information, this product is compatible according to the European Union Directive 2002/95/IEC

PACKAGING

- Standard Tubes

PROCESSING INFORMATION

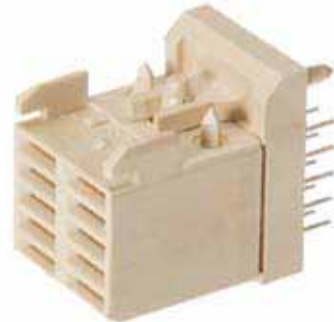
- Applicable process: wave, IR, vapor phase

REFERENCE DATA

- Product Specification GS-12-453

APPLICATION EQUIPMENT

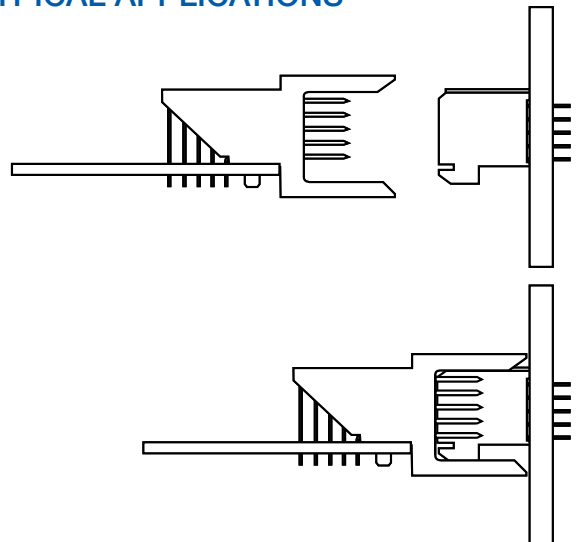
- for application equipment, check out the application equipment table on page 217-223



MATING DATA

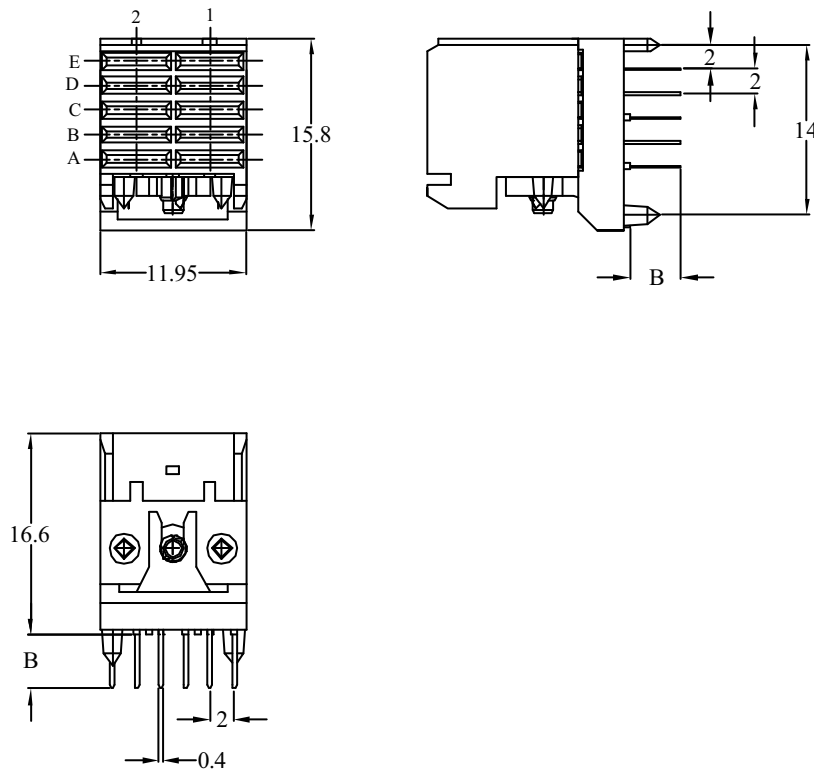
- Header, right angle, press-fit, page 127
 - part number HM1K451DDP000H6PLF
- Header, right angle, solder-to-board, page 125
 - part number HM1K51DAP000H6PLF
- Header, right angle, Pin-in-Paste, page 129
 - part number HM1K51DFP000H6PLF

TYPICAL APPLICATIONS



Receptacle, 5 row, power, straight, solder to board

PRODUCT

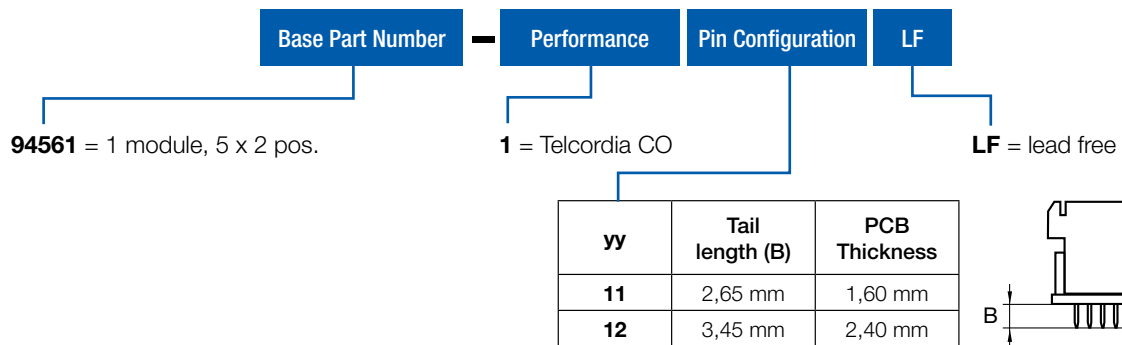


PCB pattern P16, see chapter PCB layouts

POWER CONNECTORS

PARTNUMBERS



94561 - 1yyLF



Note: for other special patterns or loadings, please check drawings, all other configurations on request only

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