RJF

Ethernet Connection System for Harsh Environment – Industrial Ethernet

RJF allows you to use an Ethernet Class D / Cat. 5e connection for 10 BaseT,100 BaseTX or 1000 BaseT networks in harsh environments:

With the patented RJStop®system you can use a standard RJ45 cordset in a metallic plug which will protect it from shocks, dust and fluids.

No hazardous on-field cabling and grounding!

Applications
- Robotics
- Industrial Process Control
- CNC Machines
- Special Machines
- Oil & Gas
- Motion Control
- Data Acquisition and Transmission in Harsh Environment
- Tele-maintenance

Data Transmission
10 BaseT, 100 BaseTX and 1000 BaseT networks Cat 5e per TIA/EIA 568B and ClassD per ISO/IEC 11801

MAIN CHARACTERISTICS
- **Compliant with IEC 60603-7 variant 11**
- **Bayonet coupling** ("Audible & Visual" coupling signal)
- **Robust metallic shells based on MIL-DTL-26482 H**
- RJ45 cordset retention in the plug: 100 N in the axis
- Mating cycles: 500 min
- Sealed against fluids and dust (IP68)
- Shock, Vibration and Traction resistant
- No cabling operation in field and no tools required
- Mechanical Coding / Polarization (4 positions)
- Compatible with cable diameter from 5,5 mm [0.216 in] to 13 mm [0.512 in]

Environmental Protection
Sealing:	IP68
Salt Spray:	48 h with Nickel plating
	> 96 h with black coating
	> 500 h with Oliv Drab Cadmium
Fire Retardant/Low Smoke:	UL94 V0 and NF F 16 101 & 16 102
Vibrations:	10 – 500 Hz, 10 g, 3 axes: no discontinuity > 10 nano s.
Shocks:	IK06: weight of 250 g drop from 40 cm [15.75 in] onto connectors (mated pair)
Humidity:	21 days, 43℃, 98% humidity
Thermal Shock:	5 cycles at - 40℃ / +100℃
Temperature Range:	- 40℃ / +85℃

Part Number Code

Series RJField		RJF	2	2	B	03 100BTX
Shell Type						
6:	Plug, Plastic Gland					
6M:	Plug, Metal Gland					
2:	Square Flange Receptacle					
2PE:	Square Flange Receptacle, IP68 backshell, Plastic gland					
2PEM:	Square Flange Receptacle, IP68 backshell, Metal gland					
7:	Jam Nut Receptacle					
7PE:	Jam Nut Receptacle, IP68 backshell, Plastic gland					
7PEM:	Jam Nut Receptacle, IP68 backshell, Metal gland					
2SA, 7SA:	Transversally sealed receptacle (unmated) see page 22					
Back Terminations *(For Receptacles only)*						
1:	Female RJ45					
1RA:	Right Angle Female RJ45					
2:	RJ45 Cordset					
Shell Finishes						
B:	Black Coating - ROHS compliant					
N:	Nickel *(Note: with this version, the inserts are metallized)* - ROHS compliant					
G:	Olive Drab Cadmium *(Note: with this version, the inserts are metallized)*					
Cordset Length *(For Receptacles with "2" Back Termination only)*						
03 100 BTX:	0.3m *[11.81 inches]*					
05 100 BTX:	0.5m *[19.68 inches]*					
10 100 BTX:	1m *[39.37 inches]*					
15 100 BTX:	1.5m *[59.05 inches]*					
00:	8 tinned holes at the rear of the PCB to solder the cable					

Remark: Cabling configuration: 100 BTX = 568B (Ethernet specification)

Examples:
- Nickel plug: RJF 6 N
- Black square flange receptacle, female RJ45 back termination: RJF 2 1 B
- Olive drab cadmium jam nut receptacle, 1.5m [59.05"] 100 BTX cordset termination: RJF 7 2 G 15 100BTX
- Black in line square flange receptacle, 30cm [11.81"] 100BTX cordset termination: RJF 2PE 2 B 03 100BTX
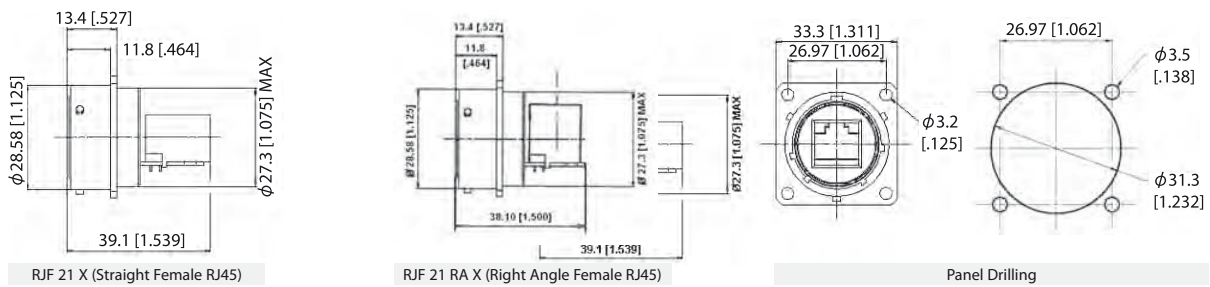- Nickel jam nut receptacle, solder termination: RJF 72 N 00

informations & contacts: **www.rjfield.com** • **contact@rjfield.com**

Plug:

■ Shell type 6 with Plastic or Metal Gland

57.8 [2.275] Fully Assembled

φ34.9 [1.374]

φ14.8 [.583]

RJF 6 X
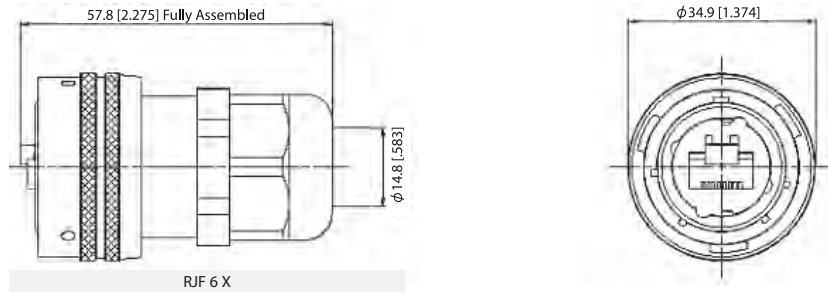
Receptacles:

■ Square flange receptacle • 4 mounting holes: Shell type 2

13.4 [.527]
11.8 [.464]
φ28.58 [1.125]
φ27.3 [1.075] MAX
39.1 [1.539]

RJF 21 X (Straight Female RJ45)

13.4 [.527]
11.8 [.464]
Ø28.58 [1.125]
Ø27.3 [1.075] MAX
Ø27.3 [1.075] MAX
38.10 [1.500]
39.1 [1.539]

RJF 21 RA X (Right Angle Female RJ45)

33.3 [1.311]
26.97 [1.062]
φ3.2 [.125]

26.97 [1.062]
φ3.5 [.138]
φ31.3 [1.232]

Panel Drilling

■ Jam nut receptacle • Hexagonal Nut mounting: Shell type 7

21.7 [.854]
3.2 [.126]
φ28.58 [1.125]
1.6 [.062] MIN/ 3.2 [.126] MAX
39.1 [1.539]

RJF 71 X (Straight Female RJ45)

3.2 [.126]
Ø 28.58 [1.125]
1.6 [.062] MIN / 3.2 [.126] MAX
38.10 [1.500]

RJF 71 RA X (Right Angle Female RJ45)

41.3[1.626]
$\phi 30.7^{\ 0}_{-0.3}$ [1.197-1.209]
$\phi 32^{+0.3}_{\ 0}$ [1.260-1.272]

Panel Drilling
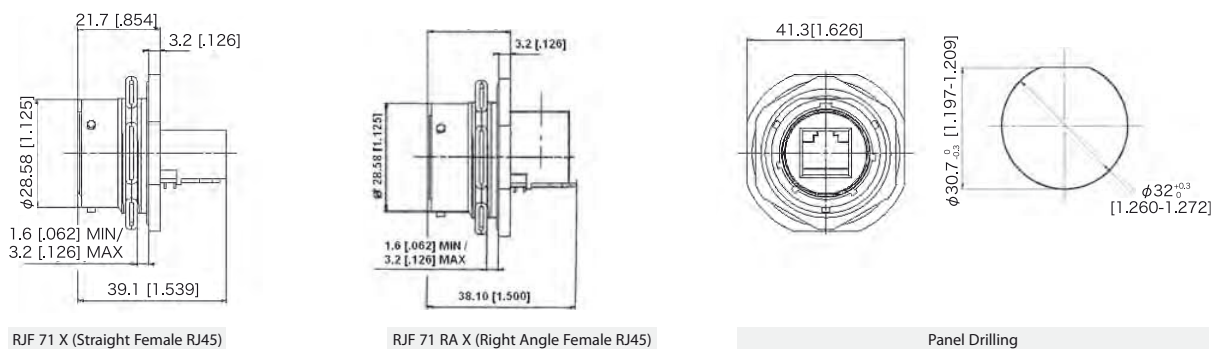
■ Receptacles with IP68 backshell: • Shell type 2PE and 7PE with Plastic or Metal Gland

82 [3.23] Fully Assembled

RJF 2PE/2PEM

82 [3.23] Fully Assembled

RJF 7PE/7PEM

Back Terminations:

Type 1: Female RJ45

Type 1RA: Right Angle Female RJ45

Type 2: RJ45 Cordset
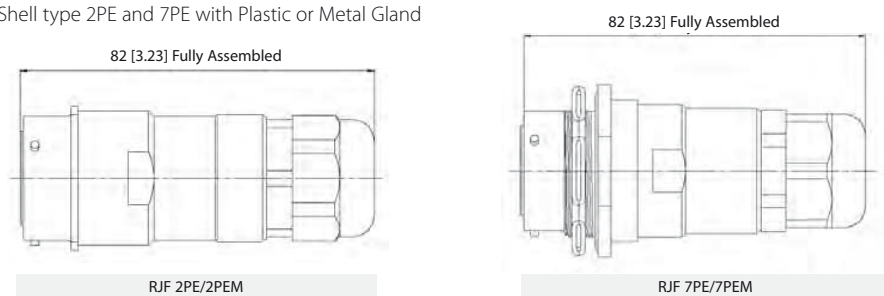
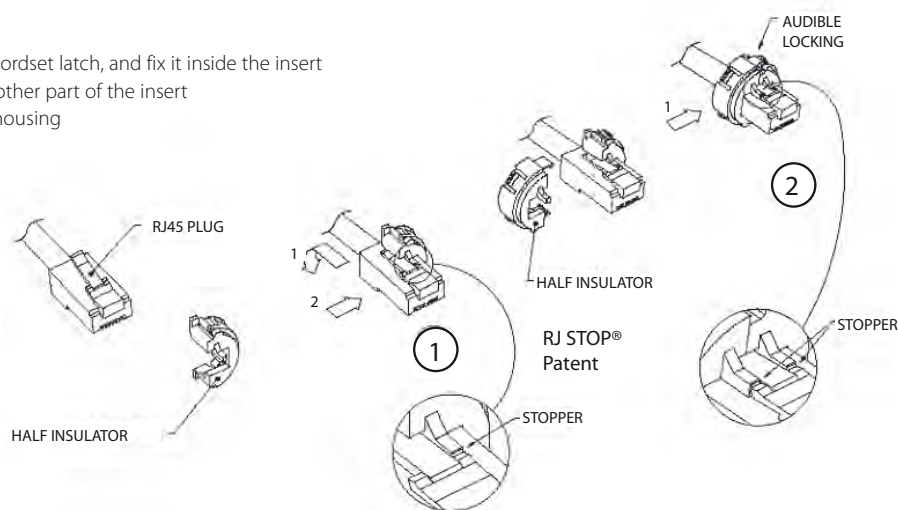Type 2 - 00: Solder - 8 tinned holes
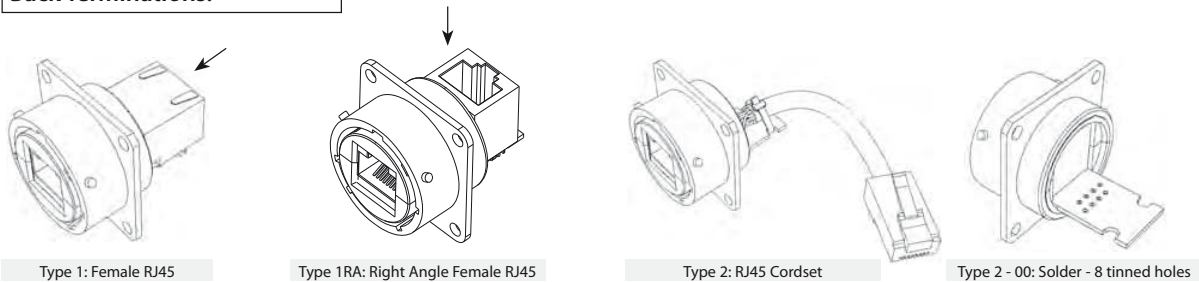
Notes: • Type 2 without RJ45 plug at the end of the cable is also available: consult factory
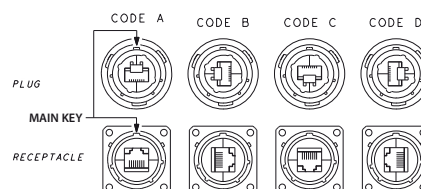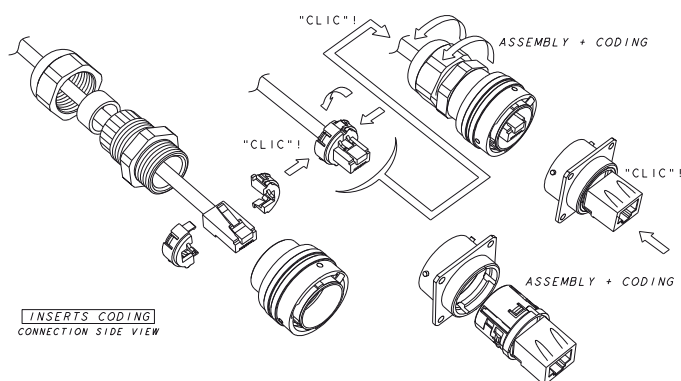
RJF

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Universal: Can be used with all standard RJ45 Cat.5e cordset brands

Assembly instructions
1. Push down the RJ45 cordset latch, and fix it inside the insert
2. Press in and click the other part of the insert
3. Insert in the metallic housing

RJ45 PLUG

HALF INSULATOR

HALF INSULATOR

RJ STOP®
Patent

STOPPER

AUDIBLE LOCKING

STOPPER

Easy and Safe: No field cabling tools required

"CLIC"!

"CLIC"!

"CLIC"!

ASSEMBLY + CODING

ASSEMBLY + CODING

INSERTS CODING
CONNECTION SIDE VIEW

CODE A   CODE B   CODE C   CODE D

PLUG

MAIN KEY

RECEPTACLE

Accessories:

■ **Metallic cap**

	RJFC	2	B
Connector Type			
6: Plug			
2: Square Flange Receptacle			
7: Jam Nut Receptacle			
Finishes			
B: Black Coating - ROHS compliant			
N: Nickel - ROHS compliant			
G: Olive Drab Cadmium			

Plug Cap

Receptacle Cap

Ø3.6

Square Flange
type "2"

Plug Cap end
type "6"

Jam nut receptacle
type "7"

■ **Panel gasket for**
square flange « 2 »thickness:
0,6 mm – P/N: JE 18

■ **Insert removal tool for**
receptacle and plug
P/N = RJF ODE

RJF

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RJF

Special receptacles: cable mount inline & PC tails
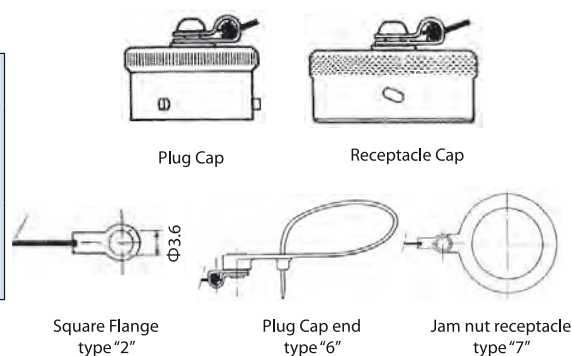
Inline Cable Mount Receptacles

Inline receptacles allow you to make cable extensions in the field by using them with rugged RJFied series plugs.

PART NUMBERS:
Plastic Gland
Black coating: **RJF2PEWF1B**
Nickel plating: **RJF2PEWF1N**
Olive Drab Cadmium plating: **RJF2PEWF1G**
Metallic Gland
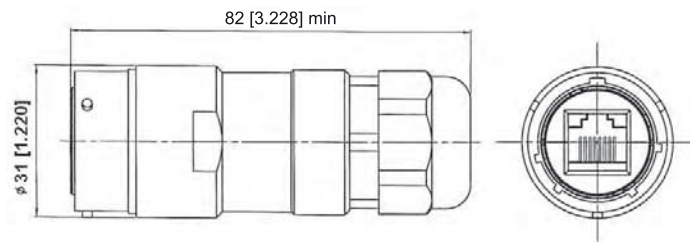Black coating: **RJF2PEMWF1B**
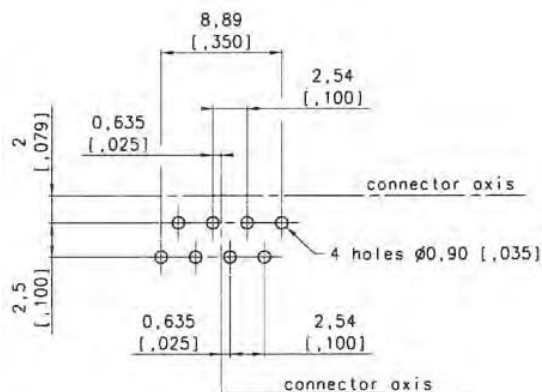Nickel plating: **RJF2PEMWF1N**
Olive Drab Cadmium plating: **RJF2PEMWF1G**

82 [3.228] min
ø 31 [1.220]

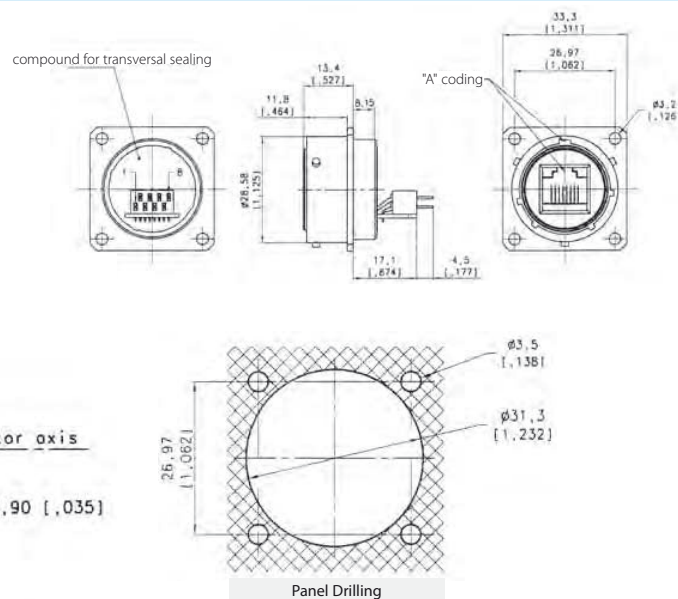## PC Tails Receptacles

These receptacles can be soldered directly on your PCB. A compound insures a transversal sealing and good performance in high vibration environments. They can be connected with rugged RJField series plugs.

compound for transversal sealing

"A" coding

PCB LAYOUT – SOLDER FACE VIEW

8,89 [.350]
2,54 [.100]
0,635 [.025]
2 [.079]
connector axis
4 holes ø0.90 [.035]
2,5 [.100]
0,635 [.025]
2,54 [.100]
connector axis

ø3,5 [.138]
ø31,3 [1.232]
26,97 [1.062]

Panel Drilling

PART NUMBERS:
Note:
1. Platings available: **"B":** black coating • **"N":** nickel plating • **"G":** olive drab cadmium plating
2. As these receptacles are compounded, coding position has to be specified in the P/N.
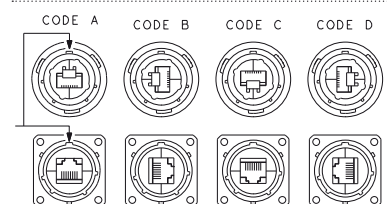*See examples hereunder*

Examples:
Square flange receptacle – black coating – coding A: **RJF2SA5B**
Square flange receptacle – nickel plating – coding C: **RJF2SC5N**
Square flange receptacle – olive drab cadmium plating – coding D: **RJF2SD5G**

MAIN KEY

CODE A   CODE B   CODE C   CODE D

RJF Special Receptacles

Amphenol

RJF/RJF TV
Environmentaly Sealed Receptacles, Transversally sealed receptacles

SEALED RECEPTACLE In some applications, a transversal sealing for the receptacle is a « must ». This will prevent fluids and dust from going through the receptacle when plug or cap are not mated to the receptacle. The sealed solution (version "S") has a compound at the rear of the receptacle as shown on the examples below. This feature is available both in RJF and RJF TV shells (please consult the relevant data sheet for product details and accessories). In addition, the Sealed RJF TV has been successfully tested in very high vibration corresponding to airplane applications.

Applications
- Outdoor Equipment
- Airplanes Equipment
- Tactical Radios
- Shelters
- Rugged computers
- Data Acquisition and Transmission in Harsh Environments
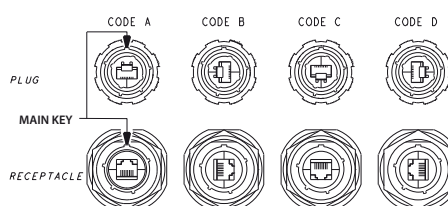
Data Transmission
10 BaseT, 100 BaseTX and 1000 BaseT networks Cat 5e per TIA/EIA 568B and ClassD per ISO/IEC 11801

IMPORTANT NOTE
Due to the compound, the coding of the connector must be done in the factory: use the codes A, B, C or D in the Part Number.

MAIN CHARACTERISTICS
- Same as the RJF and RJF TV series … a complete IP68 sealing of the receptacle (even with no plug or no protective cap mated) is added.
- Outside dimensions are the same as the standard RJF and RJF TV series.
- Vibrations: The compounded versions of the RJF TV have been tested in vibration following the NAS 1599 Aeronautic specification (Ambient temperature):
  5 - 3000 Hz, 20g, 2,5 mm [.1 inch] double amplitude, 3 axes, 12 hours
  Note: This specification exceeds MIL-C-26500 requirements.

CODE A CODE B CODE C CODE D
PLUG
MAIN KEY
RECEPTACLE

RJFTV 7S A 2G 15 100BTX

Part Number Code

Series		RJF TV	7S	A	2	G	03 100BTX
RJF:	MIL-DTL-26482 H bayonet						
RJFTV:	MIL-DTL-38999 Series III						
Shell Type							
2S:	Sealed Square Flange Receptacle						
7S:	Sealed Jam Nut Receptacle						
Coding							
A,B,C,D							
Back Terminations *(For Receptacles only)*							
1:	Female RJ45						
1RA:	Right Angle Female RJ45						
2:	RJ45 Cordset						
Shell material & Finish							
B:	Aluminium shell - black coating *(Only available for RJF Series)* - ROHS compliant						
N:	Aluminium shell - nickel plating - ROHS compliant *(note: receptacle inserts are metallized)*						
G:	Aluminium shell - olive drab cadmium plating *(note: receptacle inserts are metallized)*						
BZ:	Marine bronze shell *(only available for RJFTV) (receptacle inserts are metallized)* - ROHS compliant						
Cordset Length *(For Receptacles with "2" Back Termination only)*							
03 100 BTX:	0.3m [11.81 inches]						
05 100 BTX:	0.5m [19.68 inches]						
10 100 BTX:	1m [39.37 inches]						
15 100 BTX:	1.5m [59.05 inches]						

Remark: Cabling configuration: 100 BTX = 568B (Ethernet specification)

Examples:
- Bayonet, A coding, Olive Drab Cadmium Jam Nut sealed receptacle with female RJ45 Back termination: RJF 7SA 1 G
- Bayonet, A coding, Black square flange sealed receptacle, Female RJ45 Back termination: RJF 2SA 1 B
- Series III, A coding, Olive Drab Cadmium Jam Nut sealed receptacle, 1.5m [59.05"] 100 BTX cordset: RJF TV 7SA 2 G15 100BTX

RJF/RJF TV
Hermetic receptacles

HERMETIC RECEPTACLE In some applications, a transversal hermiticity for the receptacle is a « must ». This will prevent gas from going through the receptacle when plug or cap are not mated to the receptacle. The hermetic solution (version "H") has a compound at the rear of the receptacle as shown on the examples below. This feature is available both in RJF and RJF TV shells (please consult the relevant data sheet for product details and accessories).
Helium leakage is less than 1.10^{-6} cm^3 per second [0.1 micron cubic ft per hour] at one bar [15 psi] pressure differential.

Applications
- Outdoor Equipment
- Airplanes Equipment
- Tactical Radios
- Shelters
- Rugged computers
- Data Acquisition and Transmission in Harsh Environments
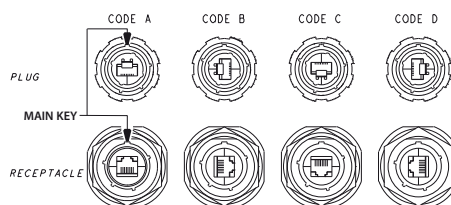
Data Transmission
10 BaseT, 100 BaseTX and 1000 BaseT networks Cat 5e per TIA/EIA 568B and ClassD per ISO/IEC 11801

IMPORTANT NOTE
Due to the compound, the coding of the connector must be done in the factory: use the codes A, B, C or D in the Part Number.

MAIN CHARACTERISTICS
- Same as the RJF and RJF TV series … a complete IP68 sealing of the receptacle (even with no plug or no protective cap mated) is added.
- Outside dimensions are the same as the standard RJF and RJF TV series.
- Vibrations: The compounded versions of the RJF TV have been tested in vibration following the NAS 1599 Aeronautic specification (Ambient temperature):
5 - 3000 Hz, 20g, 2,5 mm [.1 inch] double amplitude, 3 axes, 12 hours
Note: This specification exceeds MIL-C-26500 requirements.

CODE A   CODE B   CODE C   CODE D

PLUG

MAIN KEY

RECEPTACLE

RJFTV 7 H 2G 15 100BTX

Part Number Code

Series		RJF TV	7H	A	2	G	03 100BTX
RJF:	MIL-DTL-26482 H bayonet						
RJFTV:	MIL-C-38999 series III						
Shell Type							
2H:	Transversally Sealed and Hermetic Square Flange Receptacle						
7H:	Transversally Sealed and Hermetic Jam Nut Receptacle						
Coding							
A,B,C,D							
Back Terminations (For Receptacles only)							
1:	Female RJ45						
1RA:	Right Angle Female RJ45						
2:	RJ45 Cordset						
Shell material & Finish							
B:	Aluminium shell - black coating *(Only available for RJF Series)* - ROHS compliant						
N:	Aluminium shell - nickel plating - ROHS compliant *(note: receptacle inserts are metallized)*						
G:	Aluminium shell - olive drab cadmium plating *(note: receptacle inserts are metallized)*						
BZ:	Marine bronze shell *(only available for RJFTV) (receptacle inserts are metallized)* - ROHS compliant						
Cordset Length *(For Receptacles with "2" Back Termination only)*							
03: 100 BTX: 0.3m [11.81 inches]							
05: 100 BTX: 0.5m [19.68 inches]							
10: 100 BTX: 1m [39.37 inches]							
15: 100 BTX: 1.5m [59.05 inches]							

Remark: Cabling configuration: 100 BTX = 568B (Ethernet specification)

Examples:
- Bayonet, A coding, Olive Drab Cadmium Jam Nut sealed receptacle with female RJ45 Back termination: RJF 7HA 1 G
- Bayonet, A coding, Black square flange sealed receptacle, Female RJ45 Back termination: RJF 2HA 1 B
- Series III, A coding, Olive Drab Cadmium Jam Nut sealed receptacle, 1.5m [59.05"] 100 BTX cordset: RJF TV 7HA 2 G15 100BTX

RJF/RJF TV

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