RJF TV

Ethernet Connection System for Harsh Environment

ROHS COMPLIANT N & BZ

RJFTV 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

- Data Acquisition and Transmission in harsh environment
- Railways
- Radars
- Shelters
- Battlefield Communication
- Systems
- Navy

Data Transmission

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

Main characteristics

- Sealed against fluids and dusts (IP68)
- Shock, Vibration and Traction resistant
- No cabling operation in field and no tools required
- Mechanical Coding / Polarization (4 positions)
- Improved EMI protection
- **Tri Start Thread coupling mechanism (MIL-DTL-38999 series III type) with anti-decoupling device**
- **Robust metallic shells**
- RJ45 cordset retention in the plug: 100 N in the axis
- Mating cycles: 500 min
- Compatible with cable diameter from 6 mm [0.236 in] to 13 mm [0.512 in], for smaller diameters please consult us

Environmental Protection

- Sealing: IP68
- Salt Spray: 48h with Aluminium shell - Nickel plating
  > 500h with Aluminium shell - Olive drab cadmium plating
  1000 h with Marine bronze shell
- 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.
- Compounded versions tested per NAS 1599 (5-3000 Hz, 20g, 12h)
- Shocks: IK06: weight of 250 g drop from 40 cm [15.75 in] onto connectors (mated pair)
- Humidity: 21 days, 43°C, 98% humidity
- Thermal Shock: 5 cycles at -40°C / +100°C
- Temperature Range: -40°C / +85°C

Part Number Code

Series RJ Field TV	RJF TV	2	2	G	03 100 BTX

Shell Type

6:	Plug with Plastic gland
6M:	Plug with 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 34

Back Terminations *(Receptacles only)*

1:	Female RJ45
1RA:	Right Angle Female RJ45
2:	RJ45 Cordset

Shells material & Finish

N:	Aluminium shell - nickel plating (receptacle inserts are metallized) - ROHS compliant
G:	Aluminium shell - olive drab cadmium plating (receptacle inserts are metallized)
BZ:	Marine bronze shell (receptacle inserts are metallized) - ROHS compliant

Cordset Length *(type 2 back termination only)*

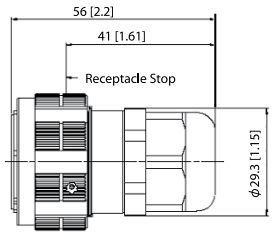
03 100 BTX:	0.3m [11.81 inches]
05 100 BTX:	0.5m 19.68 inches]
10 100 BTX:	1m [39.37 inches]
15 100 BTX:	1.5m [59.05 inches]
00:	8 tinned holes at the rear of the PCB to solder the cable

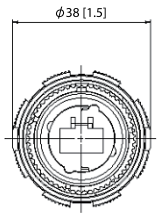
Remark: Cabling configuration: 100 BTX = 568B (Ethernet specification)

Examples:
- Olive Drab Cadmium plug with plastic gland: RJF TV 6G
- Olive Drab Cadmium Jam Nut Receptacle, female RJ45 back termination: RJF TV 71G
- Nickel Jam Nut Receptacle, 1,5 m 100 BTX cordset back termination: RJF TV 72N 15 100BTX
- Olive Drab Cadmium in line Square Flange Recept., 0,3 m 100 BTX cordset back termination: RJF TV 2PE 2 G 03 100BTX
- Nickel Jam Nut Receptacle Solder termination 8 tinned holes: RJF TV 22 N 00

Plug

■ Shell type 6 with Plastic or Metal Gland

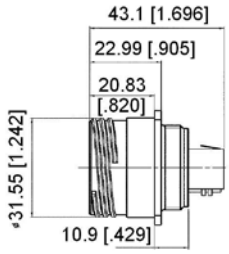




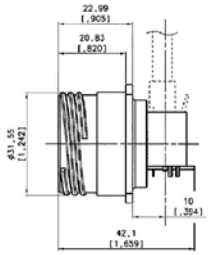
RJF TV 6 X

Receptacles

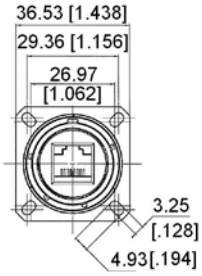
■ Square flange receptacle - 4 mounting holes: Shell type 2



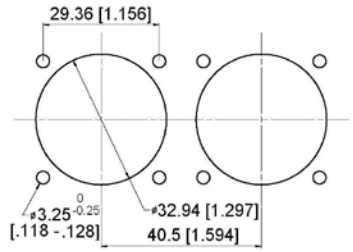
RJFTV 21 X (Straight Female RJ45)



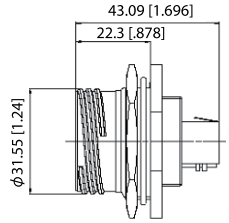
RJFTV 21 RA X (Right Angle Female RJ45)



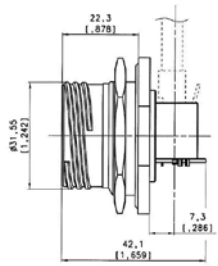
Panel Drilling



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

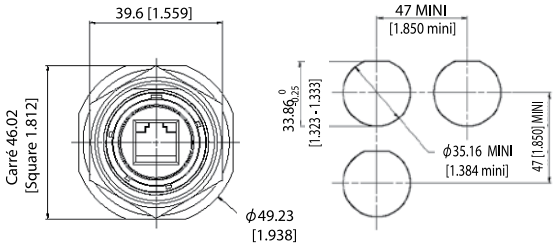


RJFTV 71 X (Straight Female RJ45)

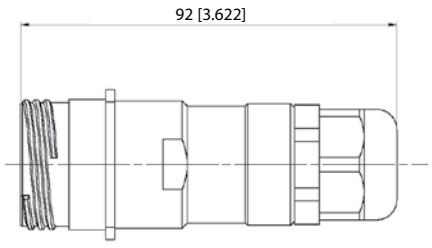


RJFTV 71 RA X (Right Angle Female RJ45)

Panel Drilling

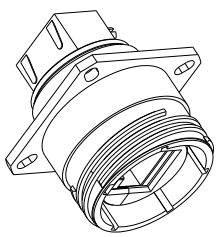


■ Receptacles with IP68 backshell: Shell type 2PE and 7PE with Plastic or Metal Gland

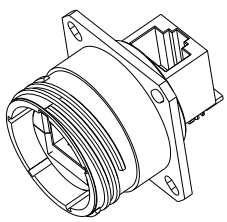


RJF TV 2PE/2PEM/7PE/7PEM

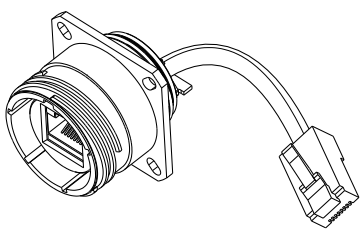
Back terminations



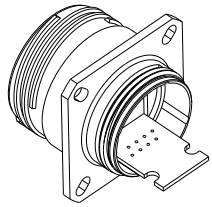
Type 1: Female RJ45



Type 1RA: Right Angle Female RJ45



Type 2: RJ45 Cordset

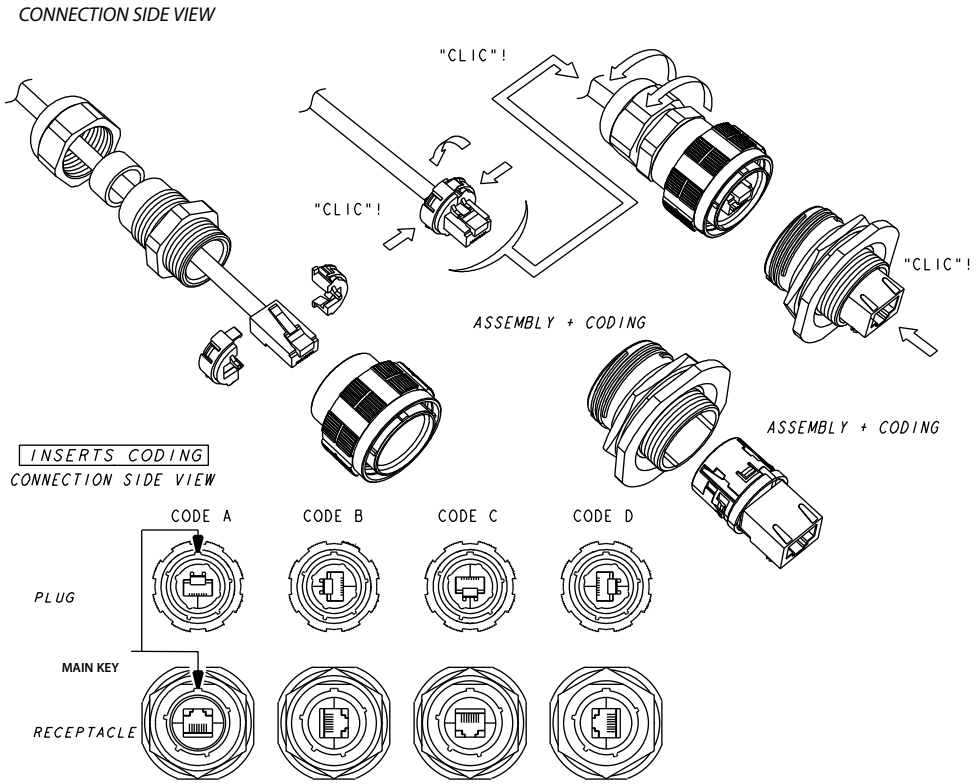


Type 2 - 00: Solder - 8 tinned holes

Notes Type 2 without RJ45 plug at the end of the cable is also available: consult factory

Assembly instructions

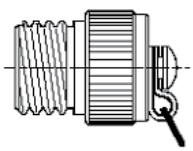
Insert Codings



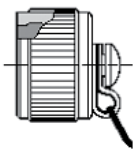
Accessories

■ **Metallic Caps**

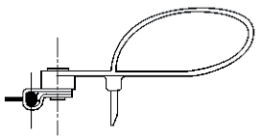
	RJFTVC	2	G
Connector Type			
6: Plug			
2: Square Flange Receptacle			
7: Jam Nut Receptacle			
Shell Material & finish			
N: Aluminium shell - nickel plating - ROHS compliant			
G: Aluminium shell - olive drab cadmium plating			
BZ: Marine bronze shell - ROHS compliant			



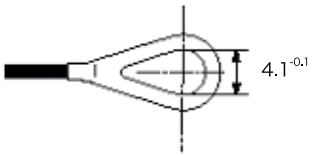
Plug Cap



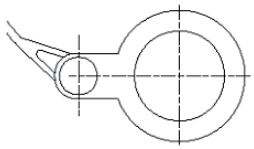
Receptacle Cap



Plug Cap end



Square flange receptacle cap end



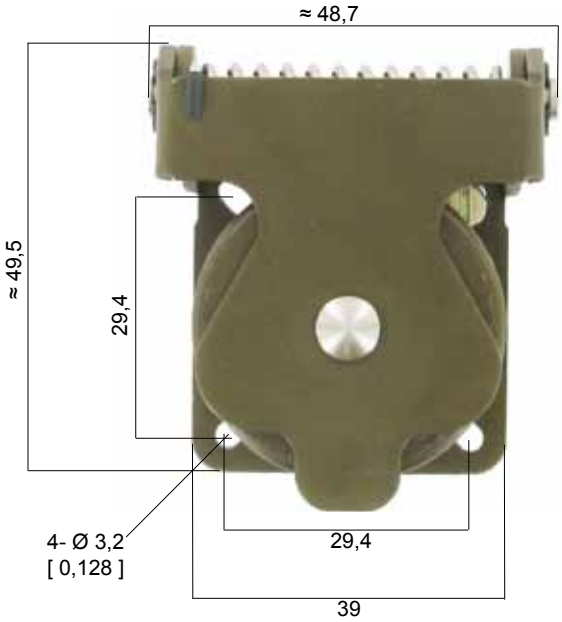
Jam Nut receptacle cap end

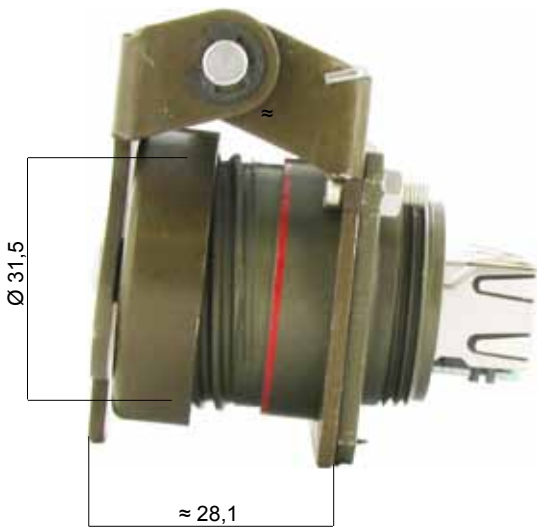
■ **Panel Gasket for square flange receptacle (Thickness: 0,8 mm [.031]): JE19**

■ **Insert removal tool: RJF ODE**

RJFTV
Self Closing Cap (SCC series)

This Self Closing cap automatically protects the RJF TV square flange receptacle (MIL-DTL-38999 type), protecting your system from dust and water projection. A spring automatically closes the upper part of the cap when the RJF TV plug is removed from the receptacle.





IMPORTANT NOTE
Metal Self Closing cap are sold separately (without receptacle).

	Plating	Part number
Part number	Black coating	**RJF TV SCC B**
	Nickel	**RJF TV SCC N**
	Olive drab cadmium	**RJFTV SCC G**

Remark: compatible with RJFTV square flange receptacle type RJFTV**2**xxx only *(see page 24)*.

- **Panel Gasket for square flange receptacle (Thickness: 0,8 mm [.031])**

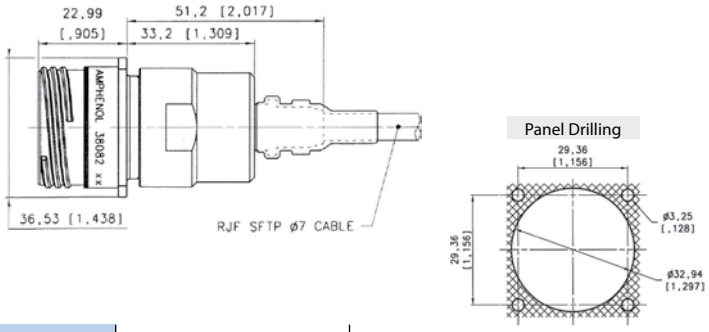
  Part number: JE19

RJF TV

Receptacles - Plugs with 360° EMI backshells

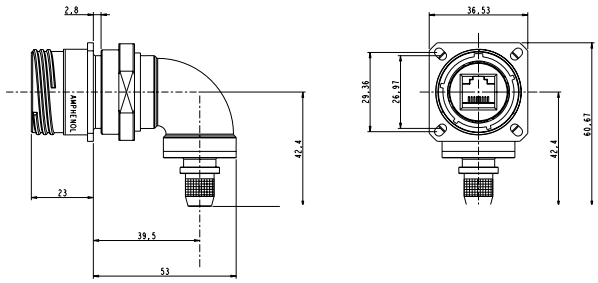
RJFTV series receptacles and plugs with EMI backshells provide a solution with 360° shielding: same protection than the one proposed by standard MIL-DTL-38999 series III connectors. With those solutions we recommend using our reinforced and double shielded cat5E cable, see page 39.

Square Flange Receptacle *Straight Backshell*



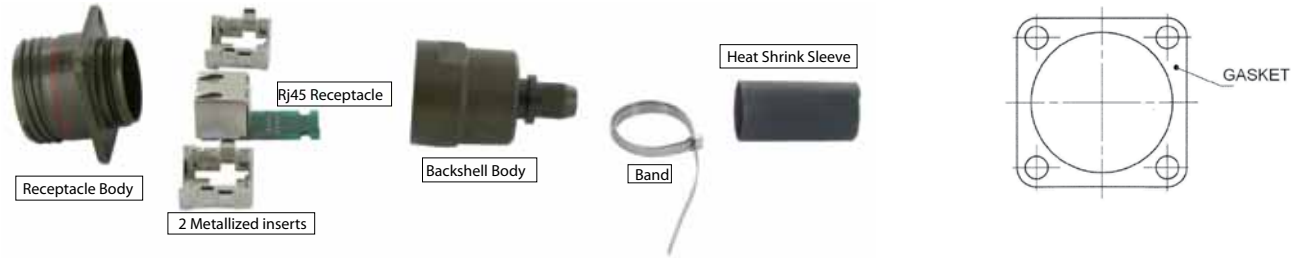
Part number	Plating	Part number
	Nickel	**Kit38082NI**
	Olive drab cadmium	**Kit38082**

Square Flange Receptacle *Right Angle Backshell*



Part number	Plating	Part number
	Nickel	**Kit40791NI**
	Olive drab cadmium	**Kit40791**

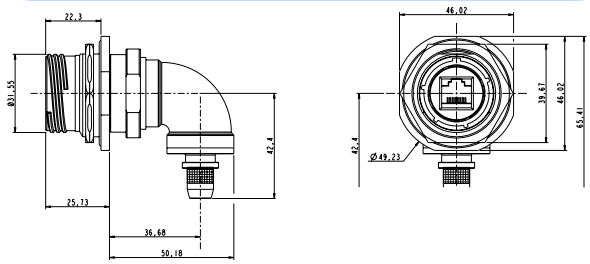
Kit38082, Kit38082NI, Kit40791 & Kit40791NI include:



Jam Nut Receptacle *Straight Backshell*

Part number	Plating	Part number
	Nickel	**Kit38204NI**
	Olive drab cadmium	**Kit38204**

Jam Nut Receptacle *Right Angle Backshell*

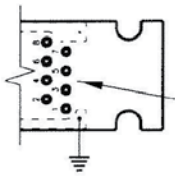


Part number	Plating	Part number
	Nickel	**Kit40771NI**
	Olive drab cadmium	**Kit40771**

Kit38204, Kit38204NI, Kit40771 & Kit40771NI include:

IMPORTANT NOTE

With these receptacles, you will have to solder your own cable on the PCB.
So the wire positions have to be defined according to your network.

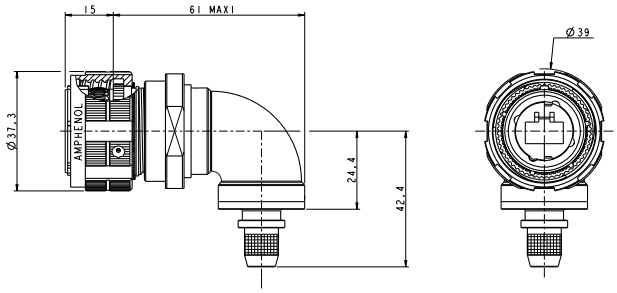


WIRE POSITION
TO BE DEFINED
BY CUSTOMER
ACCORDING TO NETWORK

Plug *Straight Backshell*

Part number	Plating	P/N
	Nickel	**Kit38081NI**
	Olive drab cadmium	**Kit38081**

Plug *Right Angle Backshell*



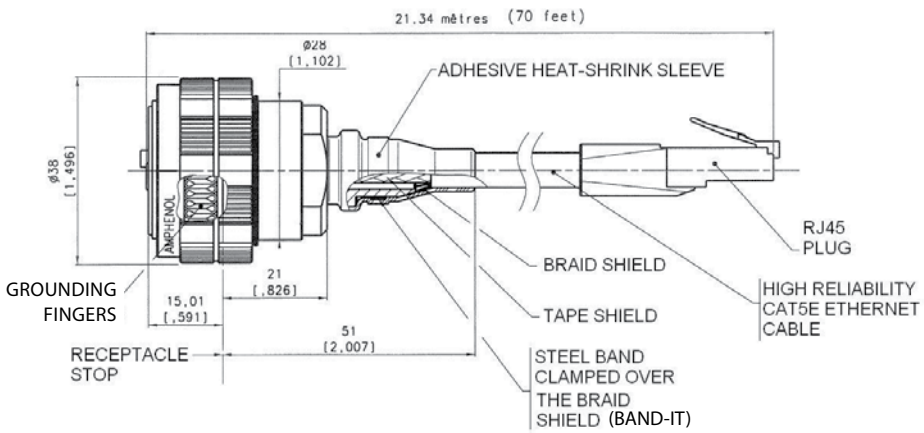
Part number	Plating	P/N
	Nickel	**Kit40792NI**
	Olive drab cadmium	**Kit40792**

Kit38081, Kit38081NI, Kit40792 & Kit40792NI include:

IMPORTANT NOTE

With these plugs, the standard RJ45 plug is not provided.
Customer will have to crimp a standard RJ45 on the cable by himself.

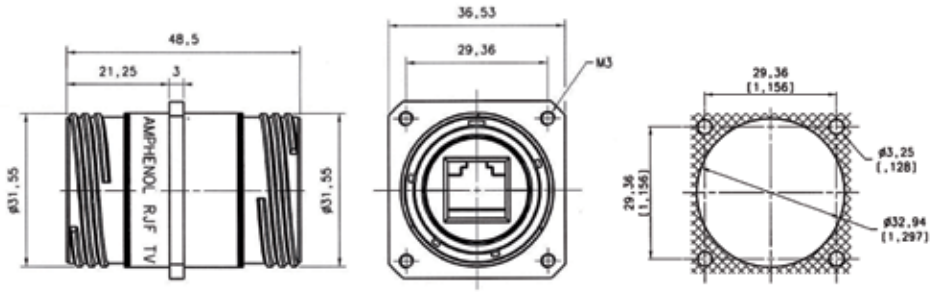
Remark: we advise using our double Shielded, reinforced Cat5E cable (see page 39) with these RJFTV series EMI connectors.
If customer wants to use his own cable, please check with us regarding compatibility with our backshells: **contact@rjfield.com**.
We also provide assembled cordsets (see examples below).
For this type of solution please provide the configuration needed: length, description of second end…



RJF TV
Through Bulkhead Receptacles

Our RJFTV through bulkhead receptacles can be connected on each side with rugged RJFTV plugs.
This system allows mechanical protection and a sealing (IP68) inside and outside the equipement, and keeps the flexibility offered by panel mount and plug connectors.
They can be connected with RJFTV series plugs.

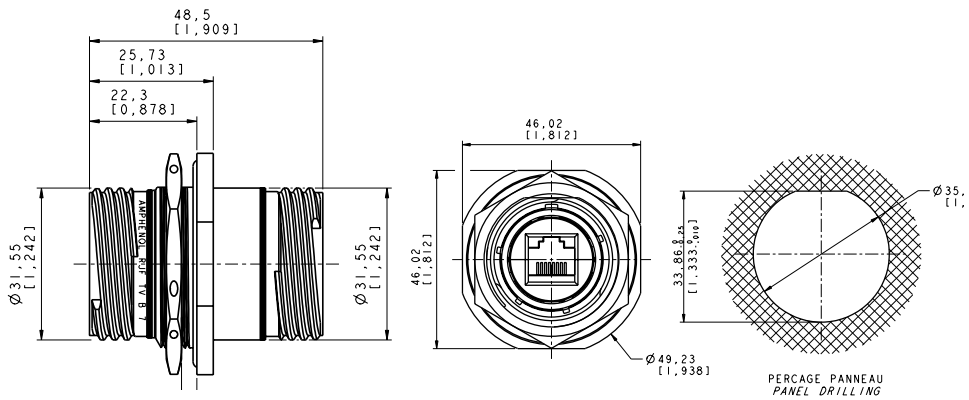
Square flange receptacle



Part number	Plating	Metallized insert	Part number
	Nickel	No	RJF TV B 2 N ISO BRUT *
	Nickel	Yes	RJF TV B 2 N ISO NI *
	Olive Drab Cadmium	No	RJF TV B 2 G ISO BRUT *
	Olive Drab Cadmium	Yes	RJF TV B 2 G ISO NI *

*** ISO BRUT = Non conductive insert**
ISO NI = Conductive insert

Jam nut receptacle



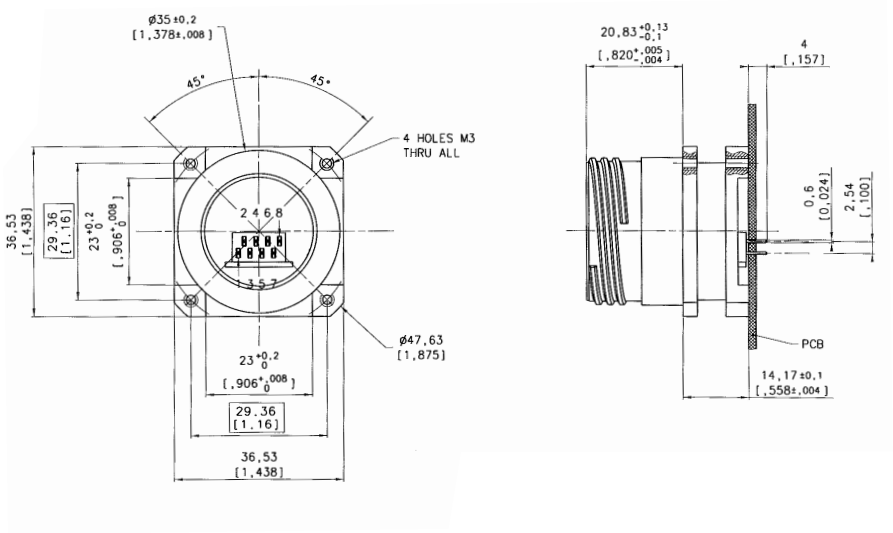
Part number	Plating	Metallized insert	Part number
	Nickel	No	RJF TV B 7 N ISO BRUT *
	Nickel	Yes	RJF TV B 7 N ISO NI *
	Olive Drab Cadmium	No	RJF TV B 7 G ISO BRUT *
	Olive Drab Cadmium	Yes	RJF TV B 7 G ISO NI *

*** ISO BRUT = Non conductive insert**
ISO NI = Conductive insert

RJF TV
Stand off Receptacles

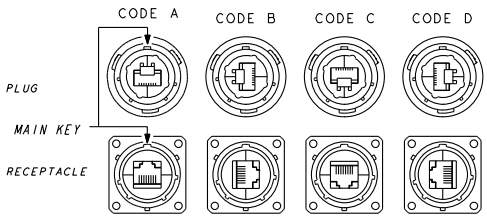
These receptacles can be sold directly to your PCB.
A compound insures a transversal sealing and good performance in high-vibration environments.
The shell of those receptacles are in the "Stand Off" style.
They can be connected with RJFTV series plugs.

Square flange receptacle

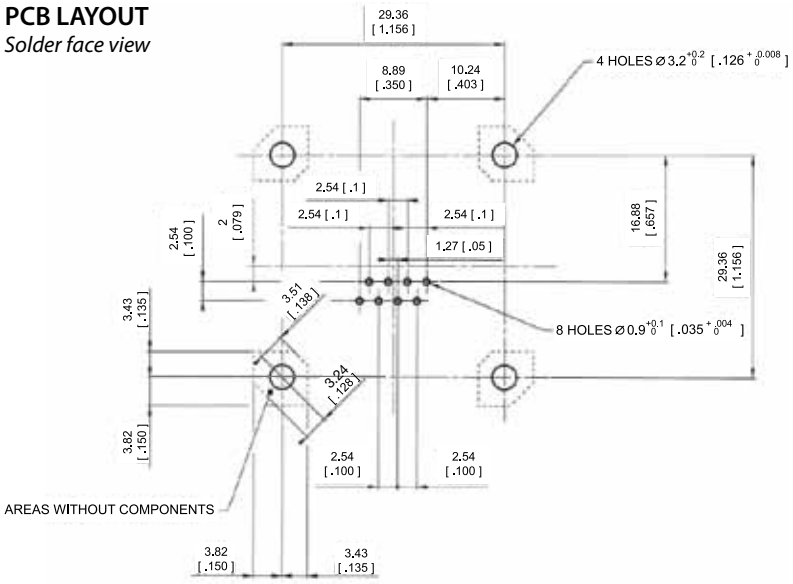


Part number	Plating available	Part number
	Nickel	RJF TV 2S X 5N F459
	Olive Drab Cadmium	RJF TV 2S X 5G F459

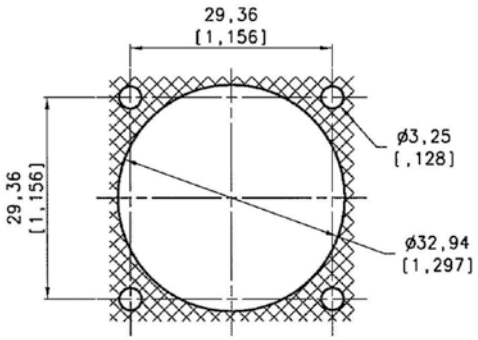
X to be replaced by the letter of the coding position you need (A, B, C, or D)



PCB LAYOUT
Solder face view

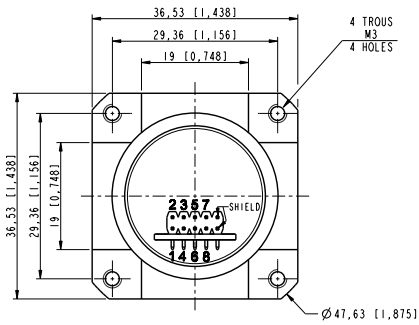


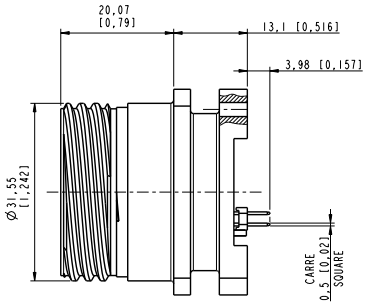
Panel Drilling



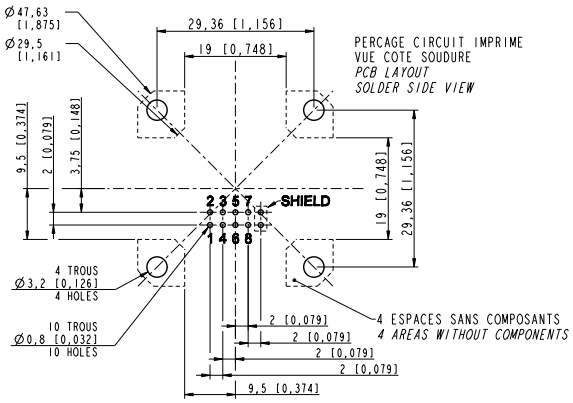
Amphenol

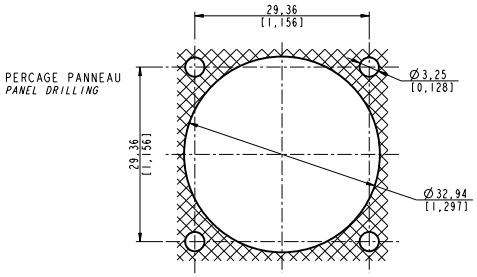
Now available with same distance between flange and PCB than the 38999 stand off one.
So you can use a 38999 stand off and a RJ45 stand off in the same implementation.



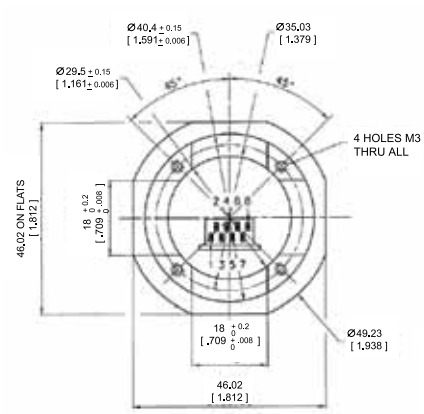


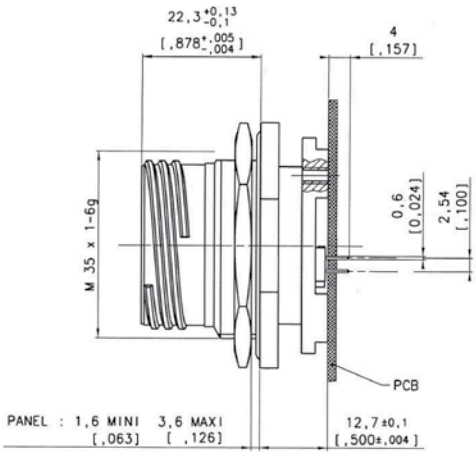
Part number: 36542





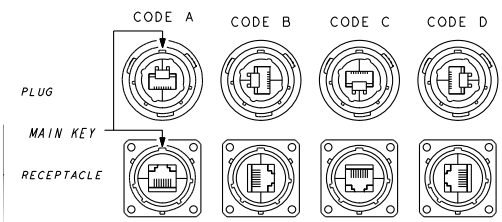
Jam nut receptacle





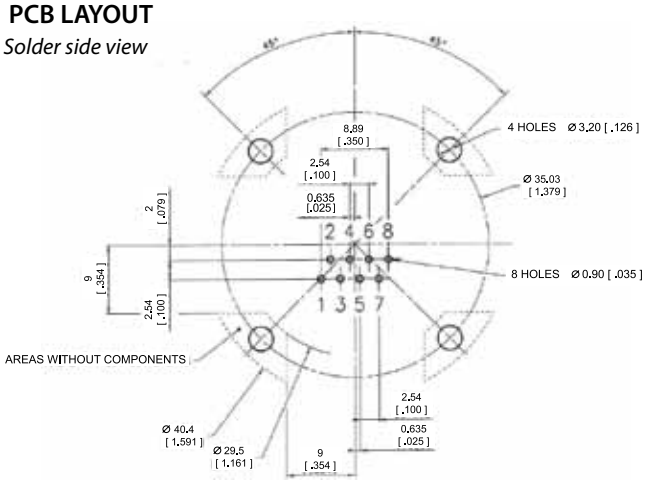
Part number	Plating available	Part number
	Nickel	RJF TV 7S X 5N F459
	Olive Drab Cadmium	RJF TV 7S X 5G F459

X to be replaced by the letter of the coding position you need (A, B, C, or D) ▷

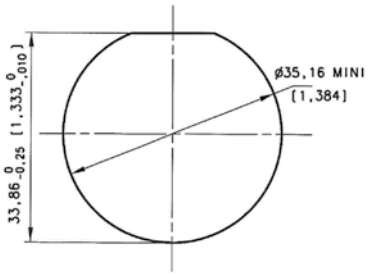


PCB LAYOUT

Solder side view

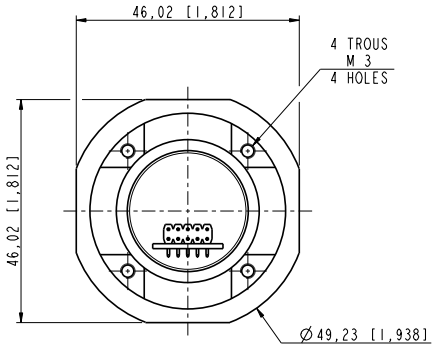


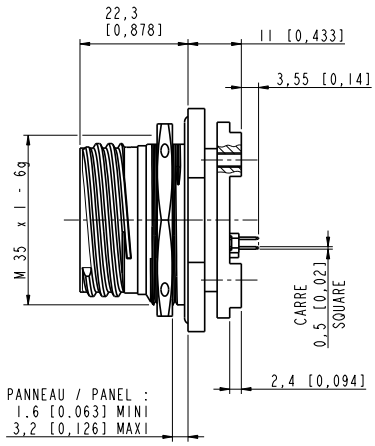
Panel Drilling



NEW

Now available with same distance between flange and PCB than the 38999 stand off one.
So you can use a 38999 stand off and a RJ45 stand off in the same implementation.

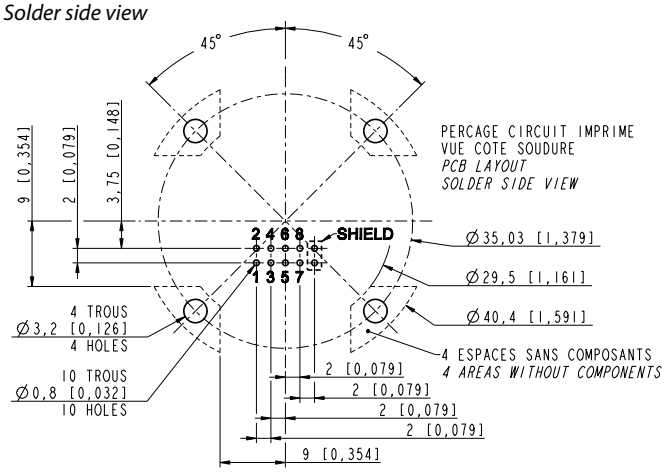


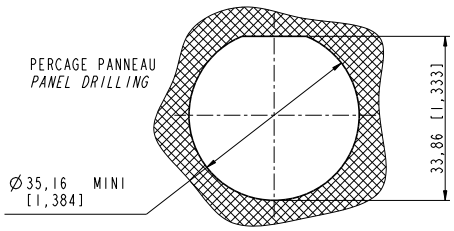


Part number: 36540

PCB LAYOUT

Solder side view





RJF/RJF TV

Environmentaly Sealed Receptacles, Transversally sealed Receptacles

ROHS COMPLIANT N, B & BZ

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

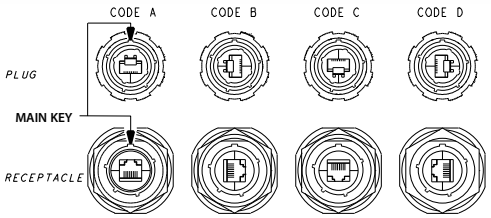
10 BaseT, 100 BaseTX and 1000 BaseT networks
Cat 5e per TIA/EIA 568B and ClassD per ISO/IEC 11801

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.

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: **see below**.



Example :
RJFTV 2S **A**2 G 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

ROHS COMPLIANT N, B & BZ

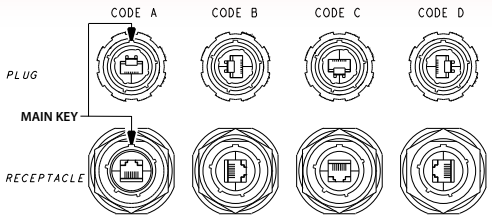
In some applications, a transversal hermiticity for the receptacle is a « must ».
This will prevent gas from going through the receptacle when plug or cap are not mated to the receptacle.
The hermetic solution (version "H") has a compound at the rear of the receptacle as shown on the examples below.
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

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.

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: **see below**.



Example :
RJFTV 2H **A**2 N 15 100BTX

Part Number Code

Series		**RJF TV**	**7H**	**A**	**2**	**G**	**03 100BTX**
RJF:	MIL-DTL-26482 H bayonet						
RJFTV:	MIL-DTL-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 TV

For big insulation wire up to 1.6 mm

Special RJF TV plug dedicated to Ethernet cable with insulation wire from 1,1 to 1,6 mm.

Remark:
- compatible with any RJF TV receptacle
- for cables which are not compatible with standard RJ45 plug

Applications

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

Data transmission

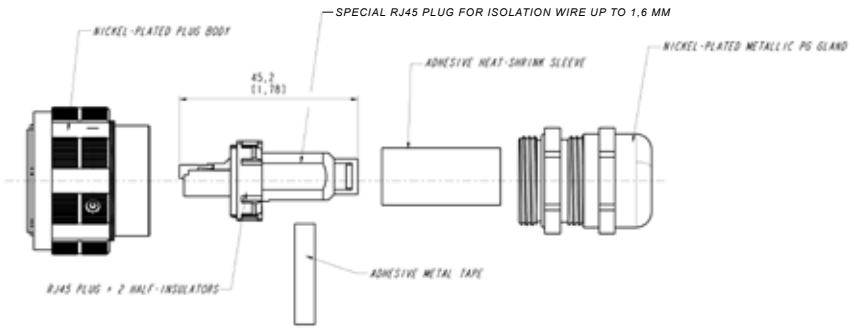
10 BaseT, 100 BaseTX and 1000 BaseT networks
Cat 5e per TIA/EIA 568B and ClassD per ISO/IEC 11801

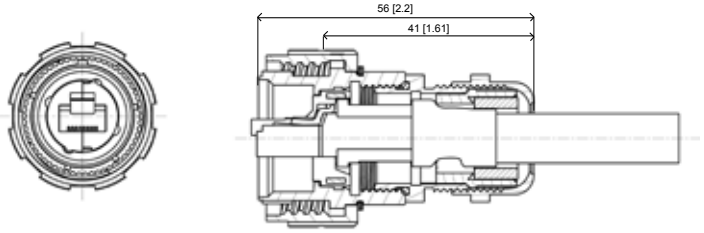
Main characteristics

- Sealed against fluids and dusts (IP68)
- Shock, Vibration and Traction resistant
- No cabling operation in field and no tools required
- Mechanical Coding / Polarization (4 positions)
- Improved EMI protection
- **Tri Start Thread coupling mechanism (MIL-DTL-38999 series III type) with anti-decoupling device**
- **Robust metallic shells**
- RJ45 cordset retention in the plug: 100 N in the axis
- Mating cycles: 500 min
- Compatible with cable diameter from 6 mm [0.216 in] to 13 mm [0.512 in], for smaller diameters please consult us

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°C, 98% humidity
Thermal Shock:	5 cycles at - 40°C / +100°C
Temperature Range:	- 40°C / +85°C





Part number	Plating	P/N
	Nickel	**35660**
	Olive drab cadmium	**35660G**