USBBF TV *(USB-B)*

USB connection system for harsh environment

USB Field allows you to use a standard USB 2.0 connection in harsh environment:.

Applications

- Embedded Computers
- Data Acquisition and transmission in harsh environment
- Railways
- Battelfield Communication Systems
- Navy Systems

Data transmission

USB specification 2.0
Data rate: up to 480 Mb/s for high speed USB

Main characteristics

- Sealed against fluids and dusts (IP68)
- Shock, vibration and traction resistant
- No cabling operation in field and no tools required
- Improved EMI protection
- Tri Start Thread coupling mechanism (MIL-DTL-38999 series III type) with anti-decoupling device - Shell size 15
- Plug retention in the receptacle: 100N in the axis
- Mating cycles: 500 minimum
- Back terminations available:
  - a USB-A receptacle
  - solder: 4 tinned holes on the PCB to solder your wire

Environmental protection

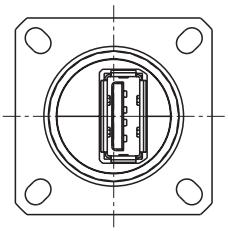
- Sealed against fluids and dusts (IP68)
- Temperature range: - 40°C / +85°C

Part number code

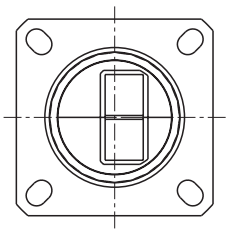
Series **USBB Field TV**	**USBBF TV**	**2**	**1**	**G**
Shell type **6:** plug **2:** square flange receptacle **2PE:** square flange receptacle with metal backshell *(type 1)* & with metal backshell + plastic gland *(type 2)* **2PEM:** square flange receptacle metal gland (only for soldering back termination type 2) **7:** jam nut receptacle **7PE:** jam nut receptacle with metal backshell *(type 1)* & with metal backshell + plastic gland *(type 2)* **7PEM:** jam nut receptacle metal gland (only for soldering back termination type 2)				
Back terminations *(receptacles only)* **1:** female USB-A **2:** solder (4 tinned holes)				
Shells material & finish **N:** aluminium shell - nickel plating - *ROHS compliant* **G:** aluminium shell - olive drab cadmium plating				

Examples:
- Plug-cadmium plating: USBBF TV 6G
- Square flange receptacle-USB-A back termination - cadmium plating: USBBF TV 21G
- Jam nut receptacle, solder termination -nickel plating: USBBF TV 72N

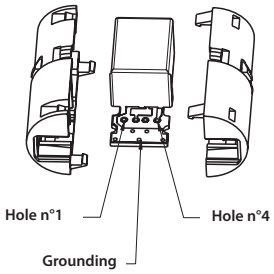
Back terminations



Type **1**: female USB-A

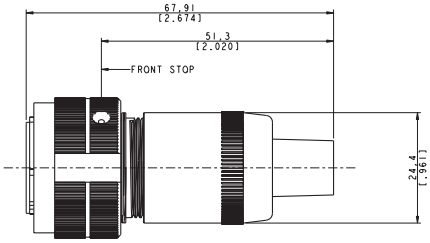


Type **2**: solder (4 tinned holes)

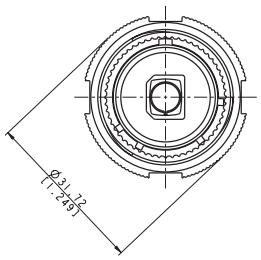


Plug

■ Shell type 6



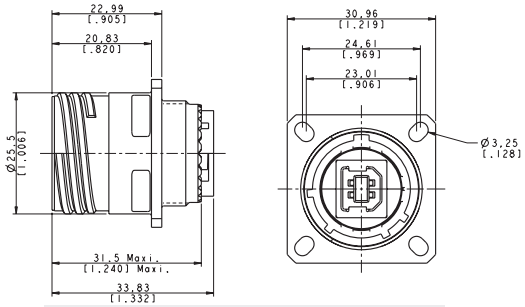
USBBFTV 6 X



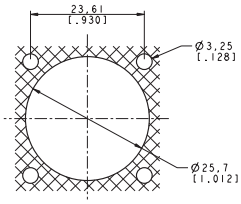
Panel Drilling

Receptacles

■ Shell type **2** - Square flange receptacle

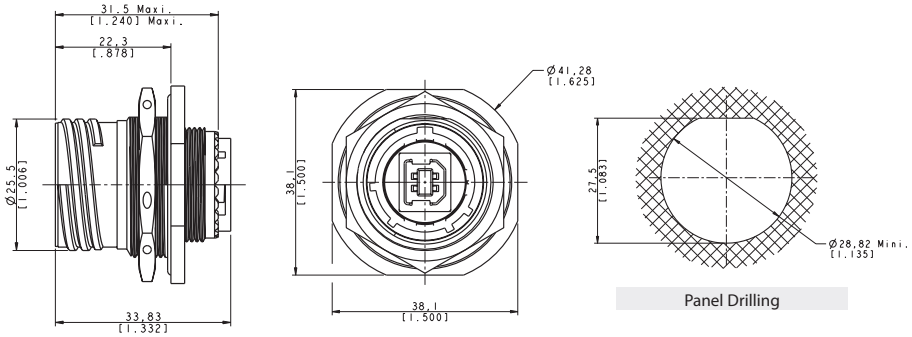


USBBFTV 2 XX



Panel Drilling

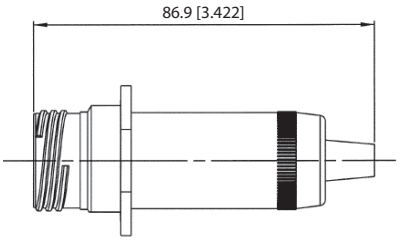
■ Shell type **7** - Jam nut receptacle



USBBFTV 7 XX

Panel Drilling

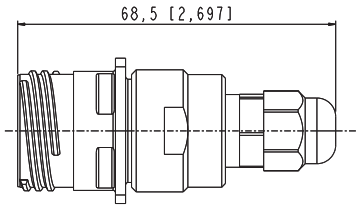
■ «**2PEM**» and «**7PEM**» shells with backshell to protect back termination from dust, shocks and vibration.



Backshell used with back termination type 1:
USB A receptacle (Not sealed)

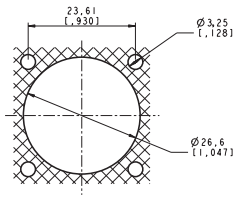
Same panel drilling as USBBFTV 2xx

USBBF TV 2PE / 7PE-1



Backshell used with
back termination type 2:
Solder (Sealed – IP68)

USBBF TV 2PE(M) / 7PE(M)-2



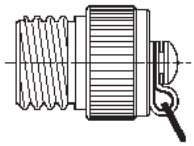
Panel drilling (*for type 2 only*)

Amphenol

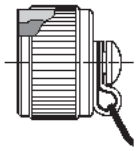
Accessories

■ **Metallic caps** (same as USB-A version - see page 99)

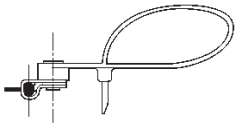
USBF TVC	2	G
Connector type **6:** plug **2:** square flange receptacle **7:** jam nut receptacle		
Shells material & finish **N:** nickel plating - *ROHS compliant* **G:** olive drab cadmium plating		



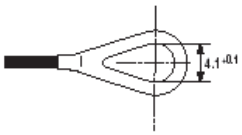
Plug Cap



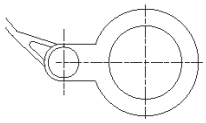
Receptacle Cap



Plug Cap end

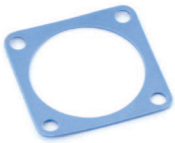


Square flange receptacle cap end



Jam Nut receptacle cap end

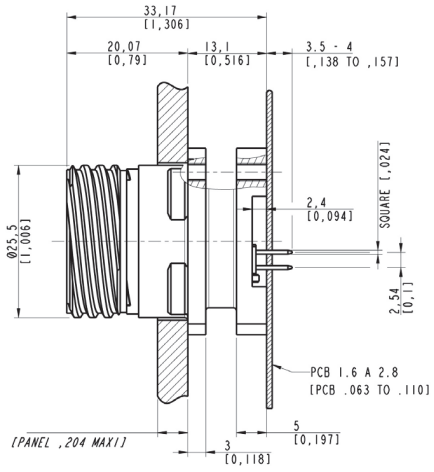
■ Panel gasket for square flange receptacle (thickness: 0,8 mm [.031]): p/n **JE15**

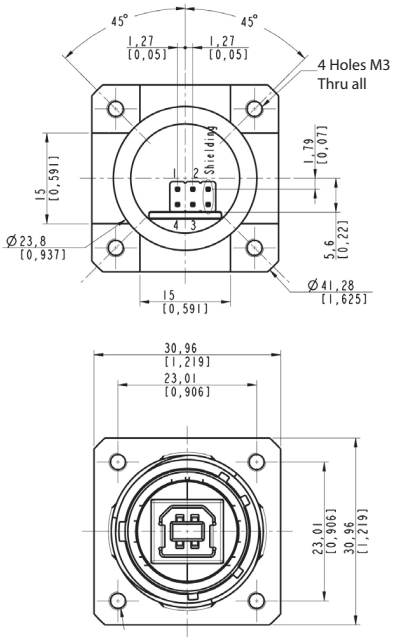


USBBF TV
Stand off receptacles

These receptacles can be soldered 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 USBBF TV series plugs.

Square flange receptacle

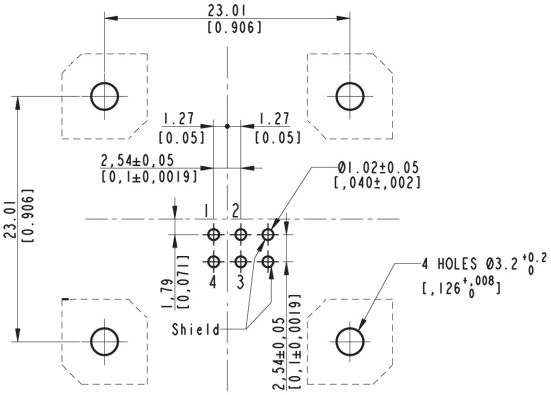




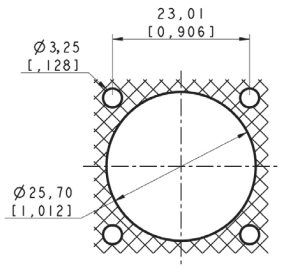
Part number	Plating	Part number
	Nickel - *ROHS compliant*	**USBBF TV 2 5 N F459**
	Olive drab cadmium	**USBBF TV 2 5 G F459**

Recommended PCB hole LAYOUT

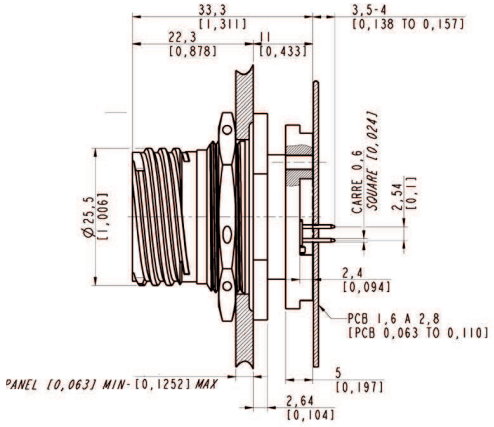
Solder side view

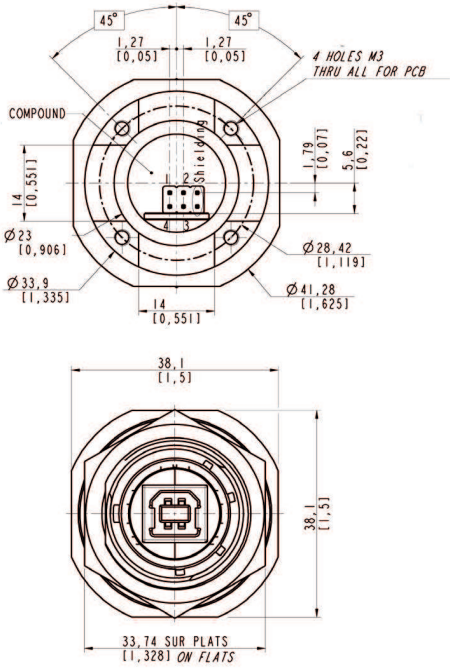


Panel drilling



Jam nut receptacle

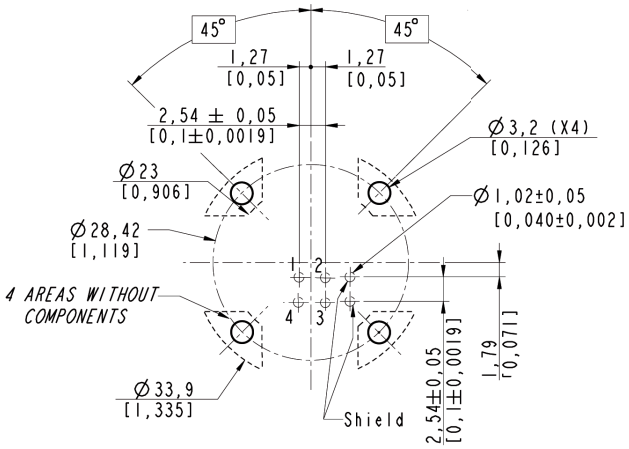




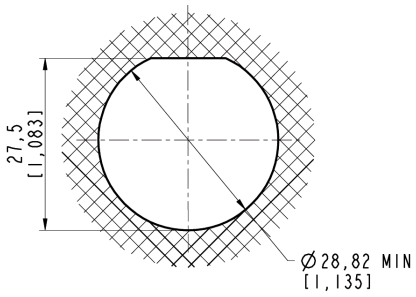
Part number	Plating	Part number
	Nickel - *ROHS compliant*	**USBBF TV 7 5 N F459**
	Olive drab cadmium	**USBBF TV 7 5 G F459**

Recommended PCB hole LAYOUT

Solder side view



Panel drilling



USBBF TV

Transversally sealed receptacles

With USB Field, you can insert a standard USB 2.0 cordset into a metallic plug which will protect it from shocks, dust and fluids.
No hazardous on-field cabling and grounding!
This metallic plug is connected into a receptacle, using a Tri Start Thread coupling mechanism (MIL-DTL-38999 series III type) with anti-decoupling device for high vibrations.

Applications

- Embedded computers
- Data acquisition and transmission in harsh environment
- Railways
- Battelfield communication systems
- Navy systems

Data transmission

USB specification 2.0
Data rate: up to 480 Mb/s for high speed USB

Main characteristics

- Sealed against fluids and dusts (IP68)
- Shock, vibration and traction resistant
- No cabling operation in field and no tools required
- Improved EMI protection
- Tri Start Thread coupling mechanism (MIL-DTL-38999 series III type) with anti-decoupling device - Shell size 15
- 2 mechanical coding/polarization possibilities by the user (receptacle insert rotation)
- USBF TV plug retention in the receptacle: 100 N in the axis
- Mating cycles: 500 minimum

Environmental protection

- Sealing (when mated): IP68 (temporary immersion)
- Salt spray: 48 h with nickel plating
  > 500 h with olive drab cadmium
  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 > 1micro 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
- Temperature range: - 40°C / +85°C

Part number code

Series USBB Field TV	USBBF TV	7S	2	G	10	OPEN
Shell type **2S:** sealed square flange receptacle **2PES:** sealed square flange receptacle + backshell + plastic gland **2PEMS:** sealed square flange receptacle + backshell + metal gland **7S:** sealed jam nut receptacle **7PES:** sealed jam nut receptacle with backshell **7PEMS:** sealed jam nut receptacle + backshell + metal gland						
Back terminations **2:** rugged USB cable						
Shells plating **N:** nickel **G:** olive drab cadmium						
USB cable length **03:** 30 cm [11.81 inches] **05:** 50 cm [19.68 inches] **10:** 1 meter [39.37 inches]						
USB cable end **A:** standard USB-A plug **OPEN:** open USB cable (no connector)						

Examples: - Olive drab cadmium jam nut receptacle: USBBF TV 7 XX
- Nickel square flange receptacle: USBBF TV 2 XX

USBB receptacle with Self Closing Cap

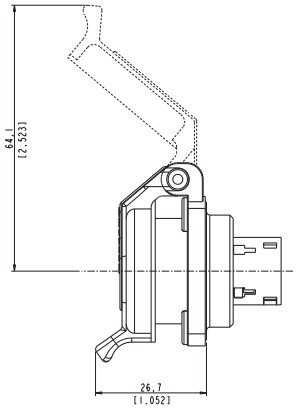
NEW

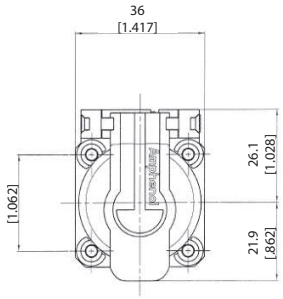
ROHS COMPLIANT N&B

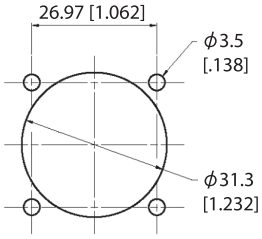
Sealing level IP54
(Splash and dust Proof)

This Self Closing Cap automatically protects the RJ Field square flange receptacles (MIL-C-26482 type), protecting your system from dust and water projections. The same cap can be used to protect USB and IEEE1394 receptacles. A spring automatically closes the upper part of the cap when either the RJ Field plug, RJ45 cordset, USB or IEEE1394 cordset, or USB key are removed from the receptacle.

USBBF 21 X SCC







Panel Drilling

Version: USB-B *(front in USB-B and back termination in USB-A)*

	Plating	Metallized inserts (EMI)	Part number
Part number*	Black coated	No (*blank insert*)	**USBBF 21B SCC**
	Nickel plated	Yes	**USBBF 21N SCC**
	Olive drab cadmium plated	Yes	**USBBF 21G SCC**

* The part number includes the receptacle + the self closing cap

■ **Note**: panel gasket with any of these receptacles, p/n **JE18**

RJF 21 X SCC, USBF 21 X SCC, & IEEE1394

RJ45 version
(see page 25)

USB2.0 & 3.0 - A version
(see pages 94 & 107)

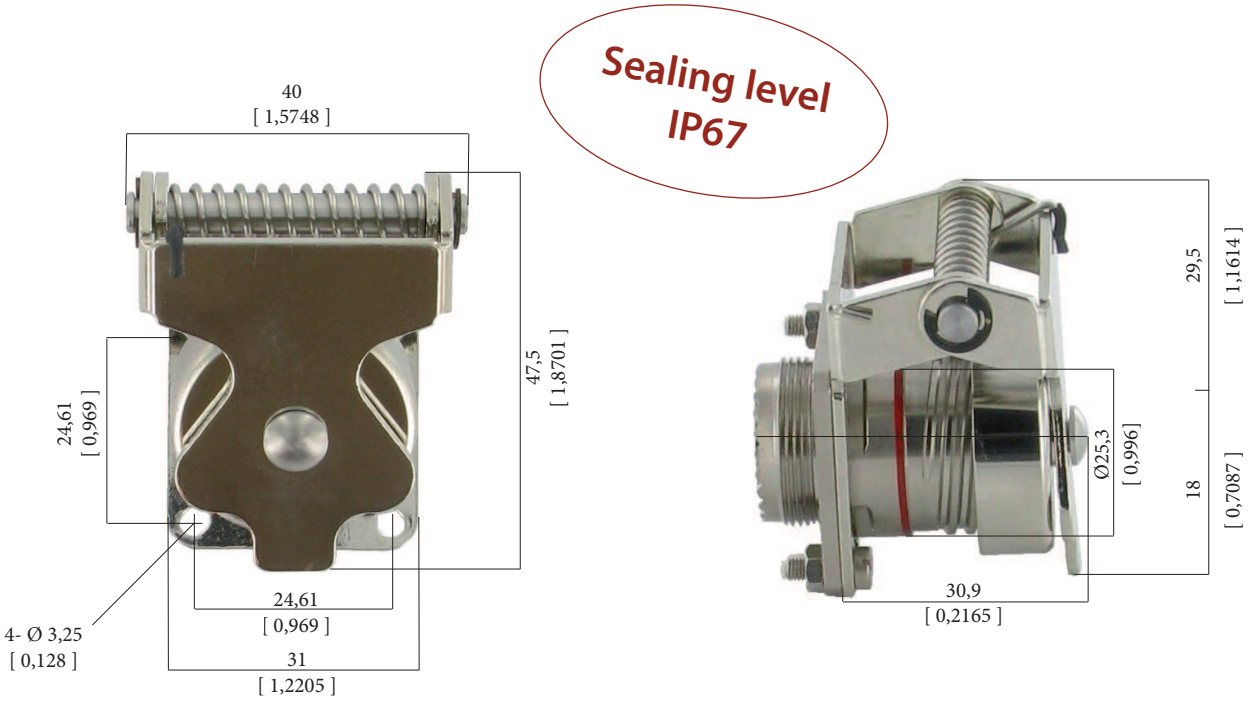
IEEE1394 version
(see page 143)

Amphenol

Metallic Self Closing Cap (SCC)

For USBB square flange receptacles.

This Self Closing cap automatically protects the USBB (2.0 - type A) square flange receptacles (MIL-DTL-38999 type), protecting your system from dust and water projection.
A spring automatically closes the upper part of the cap when the USB plug is removed from the receptacle.



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

	Plating	P/N
Part number	Black - *ROHS compliant*	**USBFTVSCCB**
	Nickel - *ROHS compliant*	**USBFTVSCCN**
	Olive drab cadmium	**USBFTVSCCG**

Remark: also compatible with USB3FTV (type A) & USBBFTV (type B) square flange receptacles:
USB3FTV2XX *(see page 95)*
USBFTV2XX *(see page 108)*

■ **Panel gasket for square flange receptacle (thickness: 0,8 mm [.031]):**

Part number: JE15