

Sealed Connector 0.50/1.0 Series

1. PART NAMES AND PART NUMBERS

1.1. Connector

Name	*Part Number	Part Name	
MALE CONNECTOR	1939921	Sealed 0.50/1.0 Series Cap Assembly 200Pos.	
FEMALE CONNECTOR	1939927	Sealed 0.50/1.0 Series Plug Assembly 140Pos.	
	1939938	Sealed 0.50/1.0 Series Plug Assembly 60Pos.	
WIRE COVER	2013360	Wire Cover 140Pos.	
	2040009	Wire Cover Assembly 60Pos.	
LEVER	1939932 Lever 140Pos.		
CAVITY PLUG	1981561	Cavity Plug for 0.50(Natural)	
	1981562	Cavity Plug for 1.0(Light Gray)	

Fig.1

*Note: Part number is consisted from listed base number and 1 digit numeric prefix and suffix with dash. Refer to catalog or customer drawing for specific part numbers for each base number. When prefix zero, zero and dash are omitted.

1.2. Terminals

<0.50 Terminals >

TE Part	Part Nama	Wire Type	
Number	Fait Name	Туре	Size (mm ²)
1939349-1 1939350-1	0.50 Receptacle (Female Terminal)	AVSSH/AESSX/AVSS	0.3
1939349-1 2069401-1		AVSSH/AESSX/AVSS	0.5
1981878-1		CAN	0.22

<1.0 Terminals >

TE Part	Part Namo	Wire Type	
Number	Fait Name	Туре	Size (mm ²)
1939351-1	1.0 Receptacle (Female Terminal)	AVSSH/AESSX	0.75
		AVSS	0.85
		AVSSH/AESSX/AVSS	1.25

1.3. Others

<Terminal extraction jig>

0.50/1.0Terminals(Commonness)

:2047050-1



1.4. Components View





2. CUSTOMER RECEIVING INSPECTION

We conduct inspections according to our quality control regulations to maintain an over all lot control. In addition, the customers should conduct receiving inspections based on the specific customer drawings.

3. STORAGE AND CARRYING

- 3.1. Terminal
 - (1) Avoid leaving or carrying the terminal reel in an open area without wrapping it in proper material.
 - (2) Do not lift up and carry the terminal reel by gripping one the side of reel, this may result in damage to the reel, and terminals before use. (See Fig.4)





Do not lift up laterally

Acceptable

Fig.4

(3) Avoid storing the terminal reel in a moist or dusty place. Stock the reel in a comparatively dry and clean place ($5 \sim 35^{\circ}$ C, $45 \sim 85\%$ RH) away from direct sunlight.

(4) When removing the terminal reel from the machine, fasten the end of terminal strip onto the edge of the reel with use of proper string or wire. (See Fig.5)



3.2. Housing

(1) Avoid storing the terminal reel in a moist or dusty place. Stock the reel in a comparatively dry and clean place ($5\sim35^{\circ}$ C, $45\sim85\%$ RH) away from direct sunlight.

(2) Avoid leaving or carrying the terminal reel in an open area without wrapping it in proper material.(3) Do not drop or shock the housing when carrying it.



4. FIXING HOUSING AND PC BOARD

4.1. Removal of Product

Please remove at the time of the male connector removal from packing state with the part which shows in Fig. 6.



Fig. 6



NOTE

NOTE When it had the place other than appointing, there is a possibility deformation such as male terminal and board lock occurring.

When removing, male terminal and board lock and housing must not be damaged or deformed by the operation.

NOTE No foreign substance is permissible in the seal area.

> When removing the hand & the finger etc. that please try do not enter to inside the male connector frontage.

4.2. Fixing Housing and PC Board

Insert the terminal of the male connector into the holes of PC Board. After verifying that the board lock entered into the hole of the PC Board and the connector caught to the PC Board, solder the terminals. Furthermore, please verify that it is not the opening of the connector and the PC Board when soldering.











In all the processes, both sides (mating side and solder side) of the terminal and the housing must not be damaged or deformed by the operation. No foreign substance is permissible in the mating area and case seal area.



See the customer drawing for the PC Board dimension.

The board lock is for temporary fixing to soldering process and is not the component which decides the position of the connector and the PC Board.



NOTE Please note that it discolors to the terminal and the housing because of the heat when it solders, and there is no transformation.

CRIMPING OPERATION 5.

Any crimping of terminals must be performed by using appropriate AMP tools according to the applicable Instruction Sheet and Specification.

- 5.1. Wires
- Applicable Wires 5.1.1 See Fig.2.
- 5.1.2 Notes for Stripping of Wire End Wire end must be stripped without nick, cutoff, or damage of wire strands.



Fig.8

Intact and Normal

Operation of Crimping Machine

Follow the instructions shown on the customer manual 409-10047 (a separate volume) for AMP-3K Terminating Machines 1725950 and AMP-5K Terminating Machines 1725900.

5.3. **Crimping Specification**

See following Application Specification for each contact

0.50 Receptacle	114 5400
1.0 Receptacle	114-5400

- 5.4. Storage and Handling of Crimped Products
 - (1) Store the products in a clean, dry area, cover with proper sheet or paper when placed in an open area until the next day.
 - (2) Crimped leads should be processed in bundles of less than 100 pieces. Take care of the tangle and damage on the products.
 - (3) Avoid stacking and piling up the in-process products in large volume. Terminal failure and fall of retention force occur by deformation of the terminal.

5.2.



6. HARNESS MAKING

6.1. Female Connector and Wire Cover



140Pos Plug housing



60Pos Plug housing



140Pos Wire Cover



60Pos Wire Cover Assembly



140Pos Lever





0.50 Cavity Plug

1.0 Cavity Plug



- 6.2. Procedure for Female Terminal Insertion into Housing
 - (1) Confirm the retainer is in pre-assembled condition. See para.6.3. The terminal can not be inserted in final lock condition.



Fig.10

(2) Confirm type of plating on the terminal. It must be the same type of plating on the female terminal and on the male terminal. The type of plating can be seen on the customer drawing.

NOTE Should not connect the terminals between different types.

(3) Confirm the terminal size (0.50, 1.0). The cavity size of housing can be identified by the shape of cavities.

See the customer drawings to know the construction of cavities.



140Pos Plug Housing

60Pos Plug Housing



(4) 140Pos turn the lever bearing to left as shown in Fig.12, and 60Pos insert the bottom surface of 0.5/1.0 Receptacle terminal with the notch of the wire exit to right and insert terminal as straight as possible into the housing.

The insertion is finished when housing lance is locked and the terminal can not be more inserted.



- **NOTE** Hold the wire so as not to generate the compression buckling of the transformation as you insert the terminal into the plug housing cavity.
- NOTE When the terminal is difficult to insert, not to push in the terminal unreasonably, pulling out one time terminal and position of the retainer, to verify the direction of the terminal, for the second time please execute terminal insertion



- **NOTE** The insert wire must not have the nick.
- **NOTE** Please do not insert it excluding applicable terminal.
- **NOTE** Please do not insert it excluding applicable wire.
- **NOTE** If it is inserted by mistake, Please be sure be sure to exchange with the new connector.
- **NOTE** Don't insert bent wire.
 - (5) By pulling the terminal by 15N MAX, check to make sure that the terminal can not be withdrawn. Please lightly push the terminal again after confirming the terminal pull, and make the clearance position into the terminal and housing lance.



6.3. Retainer (Final Lock) Operation

(1) After insertion of all of the terminals, please push the retainer to the operation hole of the retainer and put in final lock condition. The final lock operation is finished by confirmation that the retainer externals and front cavity externals are in the same line.





- The notice regarding semi- insertion inspection 6.4.
 - 6.4.1 The female terminal semi- insertion inspection with appearance
 - (1) Semi- insertion inspection of the female terminal is possible with the fact that floating occurs at the time of retainer final lock operation.



6.4.2 The female terminal semi-insertion inspection with the increase of the retainer operation load

- (1) The retainer operation load of female terminal semi-insertion is about twice the load of normal load, semi-insertion inspection is possible.
- 6.4.3 Prevention of semi-insertion with female terminal arrangement state
- (1) When the female terminals don't insert at surrounding cavities, please confirm housing lance is locked.
- **NOTE** When the female terminals don't insert at surrounding cavities, deflection of retainer may be generated. Please confirm housing lance is locked.

NOTE When abnormality is discovered, please be sure to exchange with the new item.

- Insertion Cavity Plug into Housing (Only in the case the cavity plug is attached) 6.5.
- (1) Confirm the cavity plug size (0.50, 1.0). The cavity size of housing can be identified by the shape of cavities.

See the customer drawings to know the construction of cavities.

(2) The cavity plug is inserted in the cavity hole. If the cavity plug touches the female connector surface,

and when it is not possible to insert it any more, the insertion work is completed.



NOTE The cavity plug can not be used for 0.50 and 1.0 sizes in common. Do not push the cavity plug into the inside of 0.50/1.0 cavities too much. In case of the

insertion, reuse is not allowed and Plug Assembly must be exchanged for new one. After cavity plug is inserted in cavity, it can not remove.

If it is inserted by mistake, plug assembly must be exchanged for new one.





- 6.6. Wire Cover and Lever installation operations
- 6.6.1 Installation operations of 140Pos Wire Cover and Lever
- (1) Wire Cover installation to housing

When harness inserted operations and installation of the retainer (final lock condition) is completed, wire cover is assembled as fig.16, wire cover fit position of female connector guide rail to cover W/H along the guide rail from female connector bearing opposite direction.

The locks are two positions in total on wire cover, and if all locks hang, the assembly completion.





NOTE When installing operation, please be careful not to break the W/H.

NOTE Please be careful of transformation and breakage of the lever lock, until the lever is assembled.

NOTE Exchange the connector if any defects are found.



- (2) Lever installation
 - After the wire cover is assembled, the lever is assembled in following $(1 \sim 2)$ processes.
 - ① Open the lever shaft side about 10mm, inserted in lever guide slope of the wire cover, and the lever is pushed into the direction shown in fig.17.





NOTE There is a possibility that the lever is damaged when opening too much at a lever shaft side opening. Please do not open the lever more than the necessity. Please do not leave if for a long time with the lever opened. **NOTE** Please do to the lever installation work in winter after returning each part at the normal temperature. The assembling work in the state that became cold has the possibility of damaging the part. **NOTE** Exchange the connector if any defects are found. NOTE Assume the amount of the opening of the lever to be 28mm MAX when you assemble the

lever.

Exchange the connector damage the lever when you open 28mm or more.



②After the lever shaft installation area pass the wire cover, fit the lever bearing of the female connector and lever shaft(four places), press the lever pushing point(two places) to press direction of lever as fig.18.

When push the lever, please don't contact lever lock of wire cover.

After installing the lever, please confirm the lever shaft lock and lever lock of wire cover are locked fast.



The lever is not forcibly pushed,
①installation position gap,
②lever lock relation,
③adjusting position gap of the lever shaft area,
④biting in of the wire not to push
Please confirm it.

NOTE After wire harness and connector are assembled , please operate and ship in lever lock condition (Fig.18).



6.6.2 Installation operations of 60Pos Wire Cover

When harness inserted operations and installation of the retainer (final lock condition) is completed, After confirming the slider position of the female connector and lever lock position of wire cover are correct, the wire cover is installed in the female connector in following $(1 \sim 2)$ processes.





① Be locked the fix-lock(two places) to female connector, tipping wire cover to wire exit side.



Fig.20

NOTE When installing operation, please be careful not to break the W/H.



② While hooking the fix-lock of the wire cover to the fix-lock insertion hole of female connector, please insert the lock to press direction of the arrow as fig.21. When installing operation, please be careful not to break the W/H. When the lock of the cover is fitted to the female housing, it is completion. After installing the cover, please confirm the left and right lock are locked fast.





NOTE After wire harness and connector are assembled , please operate and ship in lever lock condition (Fig.21).



6.7. Removal operations of 140Pos Lever

(1) Release the fixation of the lever.

 $\textcircled{1}\mbox{Release}$ the lever.

②Pull up the lever lightly.

3 Remove the lever shaft lock.

④Pull up the lever main frame.







Lever shaft Lock section



Fig.22

NOTE There is a possibility that the connector is damaged when the lever is turned, in spite of the lever lock does not released.

NOTE Exchange the connector if any defects are found.



(2) The Lever is removed.

Pull up the lever along the wire exit side outer wall of wire cover, and pass the wire cover exit. Please push the slider into a correct position after remove the lever.



Fig.23

NOTE There is a possibility that the lever is damaged when the lever frame side point is opened too much during the lever is removed. Please do not open the lever more than the necessity. Moreover, please do not leave it for a long time with the lever opened.

(3) Reassemble the lever.

Please assemble the lever to frame of female connector, inverse process of para.7.1.1 (2) and according to Para.6.6.1(2) 2.



- 6.8. Removal operations of Wire Cover
 - 6.8.1 Removal operations of 140Pos Wire Cover

Please insert a screwdriver of 1mm from the rear side of the wire cover and slide aside in the reverse direction of wire exit side while releasing the lock. The lock of the wire cover releases the right and left two places.



Fig.24

NOTE Please do not unlock that it is impossible.

NOTE If it pries with a screwdriver by force, a wire cover lock may be damaged in modification.



6.8.2 Removal operations of 60Pos Wire Cover

(1) The removal of the wire cover, Please push a right and left lock two places of the cover in the direction of the arrow while pushing the wire exit side of the wire cover to the under and release the lock.



Fig.25

NOTE Please do not unlock that it is impossible. NOTE Please do wire cover removal operation in the lever lock condition. There is a possibility that the connector damages it when the state of pre-setting.

②After unlock the cover from the female connector, turn the cover to direction of the fig.26 arrow that cover fix lock don't catch female connector.

Please pull it out while rotating







6.9. Retainer release operation

Confirm the retainer in pre-locked condition at extracting female terminals. If the retainer is in final-locked condition, the terminal can't be inserted or extracted. Release it the retainer from final-locked condition to pre-locked condition as the following matters.

(1) The retainer is pre-locked condition, insert the screwdriver to operation hole and push the retainer. Release it about 0.85mm, please confirm locking part is released.





NOTE Please use a screwdriver of 1.8mm in case of pre-locked. **NOTE** Please do not pull out the retainer too much. It becomes cause of damage. NOTE When the retainer operation hole has been filled, please operate the retainer after put it back in correct position. There is a possibility that the slider position is wrong.

NOTE Please do not insert the driver other than the retainer operation hole. It becomes terminal deformation and cause of rubber damage for sealed.



- 6.10. Operation of extract the female terminal
- (1) Confirm the retainer in pre-locked condition.

If the retainer is in final-locked condition, retainer must be pre-locked condition; See para.6.11. The female terminal can not be extracted in final locked condition.

- (2) Operation of extract the female terminal 0.50 and 1.0(Commonness)
 - 1 Push lightly the female terminal.
 - ② Insert the special extraction tool into the proper hole.
 - ③ Remove the loaded terminal from housing with the crimped wire while insert extraction tool.



Fig.28

NOTE If terminal can't be drawn, pull out the special extraction tool, put back it again by wire and then insert the tool again. Become cause of deformed the tool or housing lance damaged forcedly. Don't repeat this operation more than 3 times, otherwise retention force has fallen. Don't use the tool for retainer extraction.

NOTE If the female terminal can't be extracted, don't forcibly pull the wire. Confirm the housing lance is unlocked.

NOTE Do not insert the precision screwdriver or extraction jig into the female contact. If you insert this, the female contact should be exchanged, not used.



Fig.29



6.11. Control of Harness

6.11.1 Control of Harness

Don't apply excess force or shock to the connector and wire.

6.11.2 Taping up wires

Please do the taping from the inside of the wire cover to the position of the taping. Moreover, be careful not to apply overpower at the wire.

6.11.3 Harness Check

(1)Applicable mating half or equivalent product should be used at harness checking.(2)Never insert probe pin into female terminal. The pin must be probed on wire side.

NOTE If the probe pin should be inserted, the female terminal must be renewed.

6.11.4 Storage

Avoid storing the connector in a moist or dusty place. Stock the connector away from direct sunlight.

6.11.5 Shipping and Carrying

The connector should be used with the proper packaging to prevent the ingress of dust, moisture, etc.

6.11.6 Harness banding band

When the female connector and the harness is locked with the banding band, put banding part on connector mating side.

NOTE If there is banding part on connector upper surface at 60pos connector, lever touch the banding part and there is a possibility that lever operation is difficult.



7. MATING AND EXTRACTION OF CONNECTOR

7.1. Mating connector

7.1.1 60Pos side

7.1.1 (1) Lever pre-setting operations of Lever 60Pos

•Female connector of 60Pos release the lever lock Lever is put into the state of the opening pre-setting. To push the lever lock attached to the wire cover to the direction of , please turn

the lever to the direction of ②.



Lever pre-setting operation

Turn the lever until it clicks (the lever pass detent), it is completion.





Please do not forcibly push the lever lock. When abnormality is discovered, please be sure to exchange with the new item. There is a possibility that the connector is damaged when the lever is turned, in spite of the lever lock does not released.

NOTE Please do not rotate the lever more than the necessity, there is a possibility that the connector is damaged when the lever is rotated more than the necessity.





(2) The boss of the male connector and slot position of the female connector are adjusted, straight push in the direction of





- **NOTE** Check the terminal fitting condition in housing, the position of taping up wire, and retainer final-locked condition. If the retainer is in pre-locked condition, press the retainer to final lock condition as Para.6
- **NOTE** Exchange the connector if any defects are found. (Check the defects, deformation, discoloration, damage, rust, crack, deficit, etc. of housing and contact.)
- **NOTE** After verifying the male connector boss and that the slider has fallen, please operate the lever in mating.
- **NOTE** Don't apply excess force without the insertion direction at inserting.

(3) ①Furthermore push the female connector until the lever rotates inside, after female connector is temporary retention state. After the lever operation state, please turn the lever to the direction of ②.





NOTE Please do not hold the lever. When the female connector is pushed from temporary retention state,

NOTE In temporary retention state, please do not do lever operation. There is a possibility the connector breaking.

NOTE Please do not break the wire when the lever rotates.

(4)Rotate the lever as arrow direction, until it clicks. It is completion if it can't insert further. Don't apply overpower, if you can't insert into the male housing, and check the items of (1), (2).



Fig.35

NOTE After the completing the lever operation, please confirm that the lever is locked.

NOTE When at the time of lever operation abnormality is felt, without making fit unreasonably, after resetting one time lever, please do re-operation.

NOTE Female connector is lightly pulled, check that the connector doesn't come off.



7.1.2 140Pos side

- (1) Female connector of 140Pos release the lever lock
- ② Lever is put into the state of the opening pre-setting.



Fig.36

NOTE As for lever pre-setting, please pull up the lever until the detent lock becomes unable to be visible.

NOTE There is a possibility that the lever lock is damaged when the lever is turned, in spite of the lever lock does not released.

NOTE Exchange the connector if any defects are found.



Fig.37

NOTE Please do not rotate the lever more than the necessity so that there is a possibility that the connector is damaged.



(2) Please push 140pos female connector straight into the direction ①, while the boss of male connector is set to slot position of female connector.



- **NOTE** Check the terminal fitting condition in housing, the position of taping up wire, and retainer final-locked condition. If the retainer is in pre-locked condition, press the retainer to final lock condition as Para.6
- **NOTE** Exchange the connector if any defects are found.

(Check the defects, deformation, discoloration, damage, rust, crack, deficit, etc. of housing and contact.)

NOTE After verifying the male connector boss and that the slider has fallen, please operate the lever in mating.

NOTE Don't apply excess force without the insertion direction at inserting.

(3) ①Furthermore push the female connector until the lever rotates inside, after female connector is temporary retention state. After the lever operation state, please turn the lever to the direction of ②.





NOTE Please do not hold the lever. When the female connector is pushed from temporary retention state,

NOTE In temporary retention state, please do not do lever operation. There is a possibility the connector breaking.

NOTE Please do not break the wire when the lever rotates.

(4) Rotate the lever as arrow direction, until it clicks. It is completion, if it can't insert further. Don't apply overpower, if you can't insert into the male housing, and check the items of (2), (3).



Fig.40

NOTE After the completing the lever operation, please confirm that the lever is locked.

NOTE When at the time of lever operation abnormality is felt, without making fit unreasonably, after resetting one time lever, please do re-operation.

NOTE Female connector is lightly pulled, check that the connector doesn't come off.

- 7.2. Pulling out the connector
- 7.2.1 140Pos side

(1) Please push the lever lock of the female connector in the direction of , and release the lever lock. Please turn the lever in the direction of after releasing the lever lock.







NOTE When the lever does not move, do not operate forcibly, please confirm whether the lever lock is released.
 NOTE At the time of lever operation please do not grasp

 At the time of level operation please do not grasp the male connector and the other female connector.
 Like the photograph please grasp the female connector that should be released.



(2) Turn the lever to direction of pull out until it clicks and temporary retention state.



Fig.42 (3) After putting the female connector in temporary retention state, please pull out the female connector and the wire cover straightly. When in cannot pull out, without pulling unreasonably, please verify that the layer position is temporary retention position



Fig.43

NOTE When pulling out, please do not grasp the lever.



Fig.44



NOTE Please do not forcibly pull, and confirm the lever passes detent lock when can not pull out the connector.



7.2.2 60Pos side

(1) Please push the lever lock of the female connector in the direction of ①, and release the lever lock. Please turn the lever in the direction of ② while releasing the lever lock.



Fig.46

NOTE When the lever does not move, do not operate forcibly, please confirm whether the lever lock is released.

NOTE At the time of lever operation please do not grasp the male connector and the other female connector.

(2) Turn the lever to direction of pull out until it clicks and temporary retention state.



Fig.47



(3) After putting the female connector in temporary retention state, please pull out the female connector and the wire cover straightly. When in cannot pull out, without pulling unreasonably, please verify that the lever position is temporary retention position.









NOTE Please do not forcibly pull, and confirm the lever passes detent lock when can not pull out the connector.



Fig.50

- 7.3. General Attention Matters
 - (1) Don't mate and unmate the connector unnecessarily.
 - (2) Don't insert any objects except the proper connector.
 - (3)Don't apply unnecessary force or shock to the wire and connector at mating and unmating operation.