

ISH® WIRE TO WIRE 1.5mm 2P

Part No. V0171-91002-01,V0170-91002-01

Product Specification

Qualification Test Report No. TR-26048

0	S26278	August 7, 2026	Ka.Tanaka	K.Tsusu	T.Takeda
Rev.	ECN	Date	Prepared by	Checked by	Approved by

1. Scope

本規格は、ISH WIRE TO WIRE 1.5mm 2P の性能と試験条件について規定する。

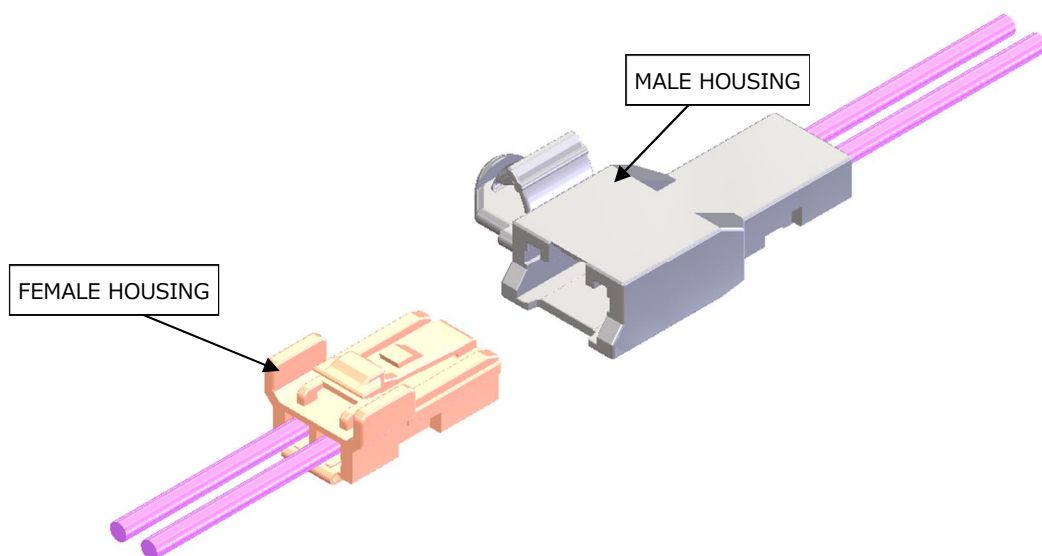
2. Product Name and Model Number

2.1 Product Name

ISH[®] WIRE TO WIRE 1.5mm 2P

2.2 Model Number

- MALE HOUSING : V0171-91002-01
- FEMALE HOUSING: V0170-91002-01
- MALE TERMINAL 1.5mm : VT016-01
- FEMALE TERMINAL 1.5mm : VT011-04



3. Ratings

3.1 Applicable Cables

Applicable Cables for 1.5 mm Female Terminal

....VT016-01 ... Cross section : 1.25mm²

Outer diameter : Φ2.84mm MAX.

Applicable Cables for 1.5 mm Female Terminal

....VT011-04 ... Cross section : 1.25mm²

Outer diameter : Φ2.84mmMAX.

3.2 Operating Conditions

Temperature:233~398K(-40℃~+125℃)

(including temperature rise due to current flow)

4. Construction, Materials and Finish

(1)MALE HOUSING.....Material : PBT, Flame retardance : UL94HB, Color : BLACK

(2)FEMALE HOUSING.....Material : PBT, Flame retardance : UL94HB, Color : BLACK

(3)1.5mm MALE TERMINAL.....Material : Copper alloy, Plating : Sn(Reflow)

(4)1.5mm FEMALE TERMINAL.....BOX Material : BRASS, Plating : Sn(Reflow)

Spring Material : Copper alloy, Plating : Sn(Reflow)

5. CONSTRUCTION, MATERIALS AND FINISH

Terminal crimp specification is based on Handling Manual 【HDM-0024】

6. Test Methods and Performances**6.1. Initial characteristics**

Table 1. Initial characteristics

Item	Measurement	Requirements	
1	Terminal appearance	No detrimental deformation	
2	Terminal outer dimension	Satisfy drawing dimension	
3	Housing appearance	No detrimental deformation	
4	Housing outer dimension	Satisfy drawing dimension	
5	Feeling(insertion/removal)	No discomfort	
6	Connector mating force	26N Max.	
7	Connector unmating force	26N Max.	
8	Connector retention force	100N Min.	
9	Insulation resistance	100MΩ Min.	
10	Withstanding voltage	No insulation breakdown or erosion	
11	Temperature rise	$\Delta T=50^{\circ}\text{C}$ Max.	
12	Leak current	1mA Max.	
13	Audible click	60dB(A) Min.	
14	Terminal crimp strength	150N Min.	
15	Terminal insertion force	3.5N Min.~4.5N Max.	
16	Terminal removal force	3.5N Min.~4.5N Max.	
17	Terminal contact force	4N Min.	
18	Voltage drop	Initial	10mV/A Max.
		After test	20mV/A Max.
19	Dry circuit resistance	Initial	10mΩ Max.
		After test	20mΩ Max.
20	Microcut monitoring	Not exceed 7Ωfor 1μs Min.	
21	Terminal retention force	With secondary lock	49N Min.
		Without secondary lock	20N Min.
22	Terminal to housing insertion force	10N Max.	
23	Hinge insertion/removal force	Insertion force	29.4N Max.
		Removal force	14.7N Min.
24	Sn whisker	125μm Max.	

6.2. Environmental Performances

Table 2. Environmental Performances

Item	Test name	Measurement	Requirements
1	Thermal aging	Housing appearance	No detrimental deformation
		Feeling(insettrion/removal)	No discomfort
		Connector retention force	Direction 1
		Terminal crimp strength	100N Min.
		Dry circuit resistance	130N Min.
		Initial	10mΩ Max.
		After test	20mΩ Max.
		Terminal retention force	With secondary lock
2	Low temperature aging	Without secondary lock	49N Min.
		Housing lock strength without terminals	20N Min.
		Housing appearance	49N Min.
		Feeling(insettrion/removal)	No detrimental deformation
		Dry circuit resistance	No discomfort
		Initial	10mΩ Max.
		After test	20mΩ Max.
		Terminal retention force	With secondary lock
3	Thermal shock	Without secondary lock	49N Min.
		Housing lock strength without terminals	20N Min.
		Housing appearance	49N Min.
		Feeling(insettrion/removal)	No detrimental deformation
		Connector retention force	No discomfort
		Direction 1	100N Min.
		Terminal crimp strength	130N Min.
		Dry circuit resistance	Initial
4	Resistance to humidity	After test	10mΩ Max.
		Terminal retention force	20mΩ Max.
		With secondary lock	49N Min.
		Without secondary lock	20N Min.
		Housing appearance	No detrimental deformation
		Connector retention force	Direction 1
		Insulation resistance	100N Min.
		Withstand voltage	100MΩ Min.
5	Corrosion gas	Leak current	No insulation breakdown or erosion
		Dry circuit resistance	1mA Max.
		Initial	10mΩ Max.
		After test	20mΩ Max.
		Terminal retention force	With secondary lock
		Without secondary lock	49N Min.
		Terminal appearance	20N Min.
		Housing appearance	No detrimental deformation
6	Vibration with temperature change	Terminal crimp strength	130N Min.
		Voltage drop	Initial
		After test	10mV/A Max.
		Terminal appearance	20mV/A Max.
		Housing appearance	No detrimental deformation
		Terminal contact force	No detrimental deformation
		Dry circuit resistance	3N Min.
		Initial	10mΩ Max.
		After test	20mΩ Max.
		Voltage drop	Initial
		After test	10mV/A Max.
		Microcut	20mV/A Max.
			Not exceed 7Ω for more than 1μs

7. Test method

7.1. Initial characteristics Test Method

(1) Terminal appearance

Test method Visual(e.g. magnifier) and tactile verification.

(2) Terminal outer dimensions

Test method Measure dimensions using caliper, micrometer, projector.

(3) Housing appearance

Test method Visual(e.g. magnifier) and tactile verification.

(4) Housing outer dimensions

Test method Measure dimensions using caliper, micrometer, projector.

(5) Feelinng (insertion/ extraction)

Test method Verification of feeling by insertion/ extraction of connector and single terminal.

(6) Connector mating force

Test method Measure the force required to mate female and male connectors at a rate of 100 mm/min. (terminals must be fully populated)

(7) Connector unmating Force

Test method Measure the force to pull the connectors apart at a rate of 100 mm/min. without the locking feature.

(8) Connector Retention Force

Test method Measure the maximum force to pull out female connector from mated state (Fig.1). Pull in directions at a speed of 50mm/min. (terminals must be fully populated)

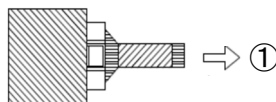


Fig 1.Measurement of connector retention force

(9) Insulation resistance

Test method Supply DC500V insulation resistance between (a) terminals (b) terminal and ground on mated connectors.

(10) Withstanding voltage

Test method Supply AC1000V between (a) terminals (b) terminal and ground on mated connectors for 1minute.
Same connection as for insulation resistance test.

(11) Temperature rise

Test method For temperature rise testing, wrap the test sample with half-lap tape starting 30 to 50 mm from the connector terminals. Ensure that the test sample is not affected by drafts or artificial cooling (e.g., installation of a thermocouple), and measure the temperature at the terminal crimping area. Measurements shall be performed with all terminals fully assembled, applying the following test currents to all terminals. Temperature measurements shall be taken after the temperature rise has stabilized.
0.5 mm terminals: 0.5 A per pole; 1.5 mm terminals: 13 A per pole

(12) Leak current

Test method Supply $16 \pm 0.1V$ to mated connector terminals. Measure maximum leak current.

(13) Audible click

Test method Horizontally insert fully populated female connector to male connector which is soldered onto PCB.
Measure by the sound with sound level meter, and analyze the frequency analyzer (FFT).
Measurement range: 10kHz~20kHz
Background noise: 5kHz MIN, Peak: 50dB MAX
Measurement must be done in a room.
Keep the position of the connector lock 600mm away from sound level meter.
Fix PCB and measure the lock sound without any touches.

(14) Terminal crimp strength

Test method Crimp wire of 100mm approx. to female terminal and pull the wire at the speed of 50-100mm/min. Measure the force when the wire breaks or the wire comes out from the terminal. Do not use insulation barrel.

(15) Terminal insertion force

Test method Measure the force to insert female terminal into fixed male connector at a speed of 100 mm/min.

(16) Terminal removal force

Test method Measure the force to pull out female terminal from male connector at a speed of 100 mm/min.

(17) Terminal contact force

Test method Calculate a contact force of female terminal and male terminal.
Measure female terminal spring displacement-force characteristics, and calculate a contact force from displacement upon male terminal insertion.
(accuracy 0.01mm MAX)

(18) Voltage drop

Test method Open: 12V, Short circuit: 1A
Measure the voltage drop between male connector lead and temp. measurement point after where is 75mm for from the crimp area of female terminal.
temperature reached saturation at 75mm from female terminal crimp.
Then, subtract voltage drops of wire and male connector lead
Wire resistance: Table 7 or actual measurement.

Table 7. Wire resistance (20°C, 75mm)

Cable Size (mm ²)	Resistance (mΩ)
0.3	3.77
0.5(JIS)	2.45
0.5(ISO)	2.8
0.75	1.77
1.0	1.4
1.25	1.07

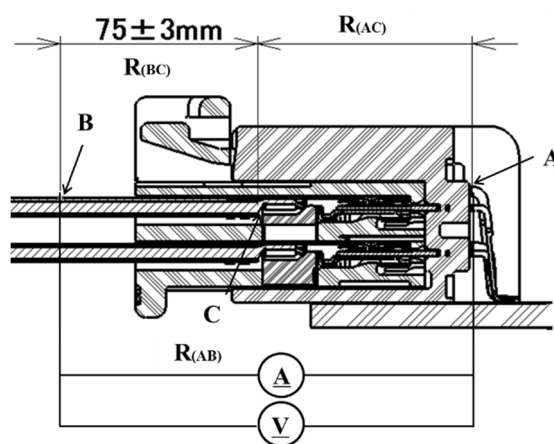


Fig 2. In-line Circuit Test Lead Location

(19) Dry circuit resistance

Test method Open: $20 \pm 5\text{mV}$, Short circuit: $10 \pm 0.5\text{mA}$

Measure resistance of point where is 75mm for from the crimp area of female terminal and male connector lead.

Then, subtract resistance of wire and male connector lead.

Wire resistance: Table 7 or actual measurement

(20) Microcut monitoring

Test method Measure dry circuit resistance.

(21) Terminal retention force

Test method Measure the force to pull out female terminal from female connector housing at a speed of 100mm/min. Test with and without retainer.

(22) Terminal insertion force to housing

Test method Measure the force to fully insert female terminal into female connector housing at a speed of 100mm/min

(23) Hinge insertion/removal force

Test method After fully inserting the male terminals into all positions of the male connector housing, measure the insertion and withdrawal force at a speed of 100 mm/min along the retainer hinge insertion axis.

(24) Sn whisker

Test method Check the surface of connector's metal portions (terminals, lead) with microscope, etc. to find Sn whisker. Use microscope with magnification of X100 MIN.
Check closely not to lose sight of whisker with different magnifications.

6.2. Environmental Performances Test Method

(1) Thermal Aging

Test method Place mated connectors in thermal chamber at $125\pm 3^{\circ}\text{C}$ for 120h.
Remove the connectors from the chamber and leave it to ambient temperature to recover.

(2) Low temperature aging

Test method Place mated connectors in thermal chamber at $-40\pm 3^{\circ}\text{C}$ for 120h.
Repeat insert/extraction for 5 times immediately after removing from the chamber,
then leave it to ambient temperature to recover.

(3) Thermal shock

Test method Place mated connectors in thermal chamber and subject them to heat /cold cycle
($100\pm 3^{\circ}\text{C}/-40\pm 3^{\circ}\text{C}$). No of cycles: 1000
Duration (0.5h) may be shortened if sample's temperature reaches test temperature
requirement early.
Monitor resistance during test, open circuit $20\pm 5\text{mV}$, short circuit $10\pm 0.5\text{mA}$.

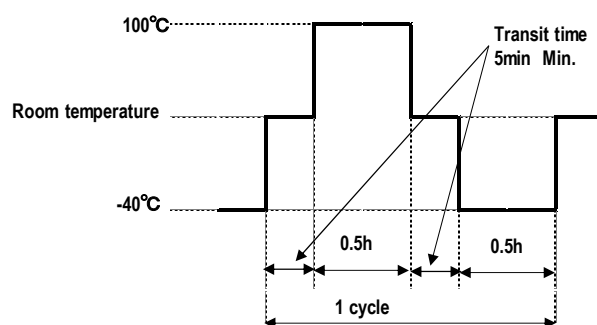


Fig3 .Thermal shock

(4) Resistance to humidity

Test method Place mated connectors in climatic chamber and subject them to $60^{\circ}\text{C}\pm 5^{\circ}\text{C}$,
 $90\sim 95\%\text{RH}$ for 96h.
Hang connectors to prevent any drips the connectors

(5) Corrosion gas

Test method Place male and female connectors (not mated) in $25\pm 5\text{ppm}$, $40\pm 2^{\circ}\text{C}$, $90-98\%\text{RH}$,
 SO_2 gas for 96h.

(6) Vibration with temperature change

Test method Fix mated connectors in same way as the shock test (show in Fig.5) on fixture and subject them to vibration at $100 \pm 3^\circ\text{C}$.

◎Vibration condition

- Acceleration: 59.8m/s^2
- Frequency: 20-200Hz
- Sweep time: 3min (per sweep)

Apply the current value(1.5mm terminal : 9.75A) for 45min,

break for 15min. No. of cycles: 300

Repeat in other directions.

Monitor resistance during 2.2A current supply.

After test, carry out vibration test on 3 axes, each for 1h. Check for any microcuts.

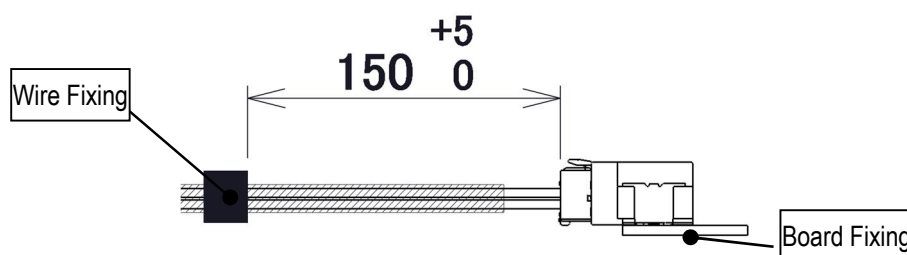


Fig4. Fixing method