ITT

Interconnect Solutions
Cannon, VEAM, BIW

Assuring 100% reliability

in over 5,000 missile launches

to our armed forces and global allies




Engineered for life

How to Order - NJS

R NJS - 24 P H ***

RoHS COMPLIANCE

SERIES

CONTACT ARRANGEMENTS

CONTACT TYPE

TERMINATION TYPE

TERMINATION CODE

SERIES

NJS - Nano center jackscrew rectangular (9, 24, 44)

NJSC - Nano center jackscrew circular (27, 72 266)

CONTACT ARRANGEMENTS

9, 24, 27, 44, 72, 266

CONTACT TYPE

P = Pin (Plug)

S = Socket (Receptacle)

TERMINATION TYPE

H = Insulated harness wire

L = Solid uninsulated wire

T = One piece contact/Lead

TERMINATION CODE*

(H) 001 = 18" #32 AWG 7/40 strd. Type "ET" Teflon per MIL-W-16878/6, color yellow.

(H) 003 = 18" #32 AWG 7/40 strd. Type "ET" Teflon per MIL-W-16878/6 color coded to MIL-STD-681, System 1.

(L) 1 = 1/2" uninsulated solid #30 AWG gold plated copper.

(L) 2 = 1" uninsulated solid #30 AWG gold plated copper

(T)* = Consult customer service

* See Termination Codes shown below for additional length modification codes.

Standard Wire Termination Codes

The following termination codes are listed for your information. For additional codes please refer to Appendix on page D-99 to D-101. All wire lengths ae minimum.

Harness Type (H)

#32 AWG, 7/40 stranded, Type "ET" per MIL-W-16878/6

Length	All Yellow	Color Coded
3 (76.2)	H 020	H 027
6 (152.4)	H 019	H 016
8 (203.2)	H 026	H 034
10 (254.0)	H 029	H 025
12 (304.8)	H 028	H 002
18 (457.2)	H 001	H 003
20 (508.0)	H 038	H 023

Length	All Yellow	Color Coded
24 (609.6)	H 009	H 004
30 (762.0)	H 010	H 005
36 (914.4)	H 011	H 006
48 (1219.2)	H 013	H 048
72 (1828.8)	H 017	H 046
120 (3048.0)	H 042	H 041

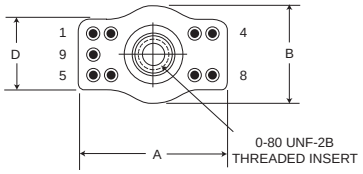
Solid Uninsulated Type (L)

#32 AWG gold plated copper.

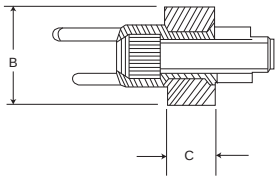
Code	Length	Code	Length
L61	.125 (3.18)	L14	.750 (19.05)
L56	.150 (3.81)	L2	1.000 (25.40)
L57	.190 (4.83)	L7	1.500 (38.10)
L39	.250 (6.35)	L6	2.000 (50.80)
L58	.375 (9.53)	L16	2.500 (63.50)
L1	.500 (12.70)	L10	3.000 (76.20)

Center Jackscrew/Rectangular

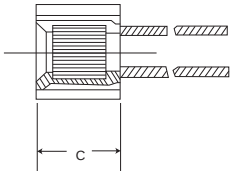
NJS-9 & NJS-24



Face View Pin Insert



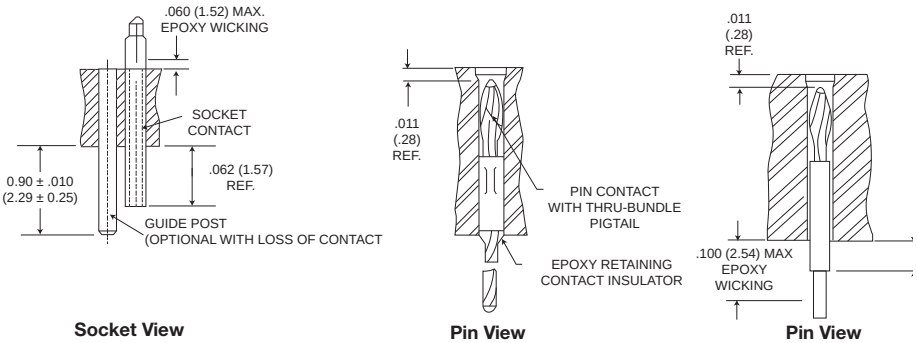
Receptacle Side View



Plug Side View

Part Number	A Max.	B Max.	C ±.005 (0.13)	D ±.005 (0.13)
NJS-9P*	.255 (6.48)	.165 (4.19)	.138 (3.51)	.116 (2.95)
NJS-9S*	.255 (6.48)	.165 (4.19)	.078 (1.98)	.116 (2.95)
NJS-24P*	.435 (11.05)	.165 (4.19)	.138 (3.51)	.116 (2.95)
NJS-24S*	.435 (11.05)	.165 (4.19)	.078 (1.98)	.116 (2.95)
NJSC-266		.165 (4.19)		.116 (2.95)
NJSC-72		.165 (4.19)		.116 (2.95)
NJSC-44		.165 (4.19)		.116 (2.95)
NJSC-27		.165 (4.19)		.116 (2.95)

Contacts



Socket View

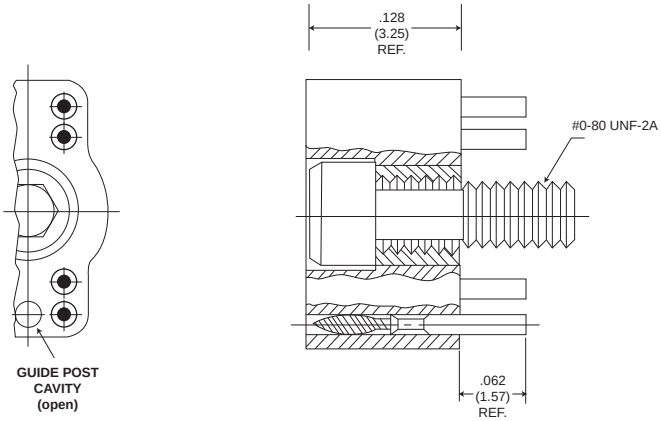
Pin View (Thru-Bundle Contact)

Pin View (Crimp-Type Contact

NOTE: Guide posts can be installed in any contaact cavity for polarization purposes.

Connector Saver

NJS-9P & S



Part Number: NJS97294-835

Dynamic Custom Cable Assemblies for Harsh Environments
ITT has been a world leader in designing and manufacturing harsh environment micro interconnects and cable assemblies for over fifty years. In addition, our historical product and assembly expertise dates back over 85 years to the founding of the original ITT Cannon. Today, we provide complete turnkey cable assemblies for all of ITT's micro connector portfolio including: Cent Line Interconnects, MDM series, M83513 Series, MEB series, MDM Mixed Signal Packages, MT strip interconnects, micro miniature circular MIK series, and our high density Nano Connectors. Our cable assembly expertise has allowed ITT to develop innovative Six Sigma driven manufacturing processes that allows our customers a full breadth of tight pitch cable assemblies in 0.100, 0.075, 0.050, and 0.025 contact spacing.

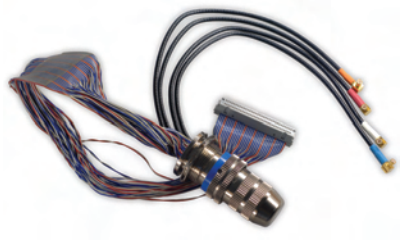
ITT's harsh environment interconnects and cable assemblies are used in the most demanding applications and environments. You will find our products in such markets as: Aerospace, Defense Electronics, Geophysical Exploration, High Speed Computer Networking, Industrial Automation, Medical Electronics, Satellite and Space Communications, and Telecommunications. Our complete interconnect solutions have flown on every major Aircraft and Space platform since the 1940's. In fact, many aircraft mechanics still refer to ITT Cannon connector and cable assemblies as the Aviation standard.

Our product portfolio has been developed and is continuing to be developed to provide our customers with new and better technologies that offer superior system level performance while lowering overall system level costs. Our corporate culture in Six Sigma Methodologies allows ITT to continuously challenge our Engineering and Scientific professionals to develop new processes and technologies in Material Science, Automation, and Testing to ensure that our customers get the best cost effective harsh environment cable assemblies from ITT. You should expect no less from an Industry leader.

The following paragraphs highlight several examples of interconnect cable assemblies for various Market segments that ITT services. These examples represent just a snapshot of the many custom micro interconnects or cable assemblies that ITT can provide the industry.

Custom Micro D and M83513 Interconnect cable assemblies
As one of the original developers of the Micro Interconnect technology, ITT has been an industry innovator in providing complete harsh environment cable assemblies and stretching the state of art in such areas as: Filtering, Hermetics, moisture barriers, High Speed and Mixed Signal Packages, EMI suppression, and multiple cable types. Most of ITT's custom cable assemblies utilize our standard Micro pin contact system. However, ITT does use other types of contact systems when manufacturing mixed signal interconnect systems where signal speed and power contacts will be incorporated into a complete cable assembly solution.

ITT manufactures complete cable assemblies worldwide at locations in Santa Ana California, Basingstoke UK, and Nogales Mexico. The various engineering and manufacturing centers of excellence are utilized to best fit various cable assembly and product platform specialties to provide our customers with the most cost effective solutions.



Space Grade Micro Interconnect cable assemblies
ITT has been deciding and manufacturing Space Rated interconnects and cable assemblies since the beginning of the US space Program in the mid 20th century. Prior to the MIL DTL M83513 specification ITT had been qualified for all NASA GSFC performance and specification requirements, on numerous satellite and space launch systems. ITT's Engineering and Product teams have over 200 years of combined experience in design, manufacture, and test of Space flight interconnects and cable assemblies. Our expertise in material science, manufacturing processes, out gassing, testing and screening, Magnetic permeability, and Cryogenics has given ITT a tremendous understanding in developing high reliability space system interconnects and cable assemblies .

All of ITT's Space rated micro interconnect assemblies utilize ITT QPL M83513 connectors. These cable assemblies are tested to meet the most stringent performance requirements as outlined by numerous NASA GSFC specifications. Additional performance and test requirements beyond existing NASA GSFC guidelines can always be tailored so that additional custom test programs can be incorporated.

High Temperature Harsh Environment Interconnect Assemblies

The proliferation of deep water drilling prospects in the world's oceans has created increased performance demands for micro miniature interconnects and cable assemblies for down hole oil field exploration. Not only are new fields being discovered in ocean depths greater than five miles but the wells themselves are being drilled deeper into the earths crust, sometimes to depths of 30,000 feet. Thus, the temperature extremes in excess of 200 degrees C are becoming the norm. In this the most demanding of environments, ITT has been designing and manufacturing such micro interconnect connector and cable assemblies for over forty years. Again our engineering and manufacturing expertise in the material science of Liquid Crystal Polymer (LCP), flourosilicones, plating, metals, and high temperature epoxies is leading ITT to develop high temperature performance beyond 200 degree C operating temperatures.

Pictured below is an ITT high temperature nano interconnect assembly. ITT is developing new products around this nano interconnect platform that will not only increase signal density but will include new material's and processes for higher temperature applications.

Medical Electronics Cable Assemblies:

As microminiaturization continues in the medical technologies field so the contributions of ITT's micro interconnect devices and assemblies. Our custom medical assemblies are utilized in such applications as: patient monitoring, diagnostics, imaging, and disposable systems. These types of application have been well served by ITT's Nano, MT strip and MIKQ series of interconnects. In addition to there specific connector types, ITT is well experienced in the careful selection of medical grade cables and termination materials to ensure fully compliant med. cal cable assemblies.

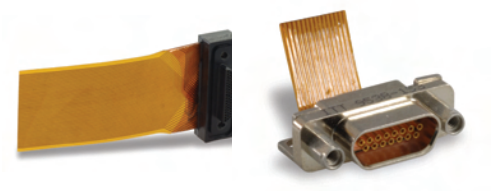
Shown above is an example of ITT's MIKQ high strength plastic circular quick disconnect connector cable assembly for a medical application.

Terminating to Flexible Circuits

Ideally, for a low profile and a neat finish, it is best to terminate flexible circuits in line with the contacts. Since most Microminiature connectors have contacts set into two or three rows, termination is a simple process.

The diagrams (right) are basically a design guide for pad arrangements, to suit MDM connectors in particular and to ensure the circuits enter the potting well. The length of the pad is optional but of course it is important to provide enough coverlay, especially at the edges of the circuit, to avoid de-lamination. We suggest at least 0,51 mm (.020 inches). Our standard potting shrouds provide support to the circuit with a dimension of 7,00 mm (.275 inches) from the rear of the flange.

Please consult Customer Service for specific flex circuit assembly design considerations and requirements.



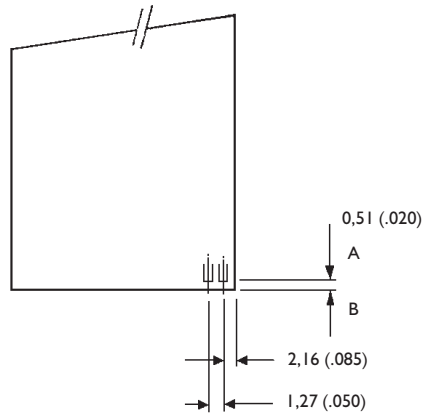


Diagram 1 shows details of the pad spacing and the suggested amount of material to be left between the end of the pad A and the edge of the flex B.

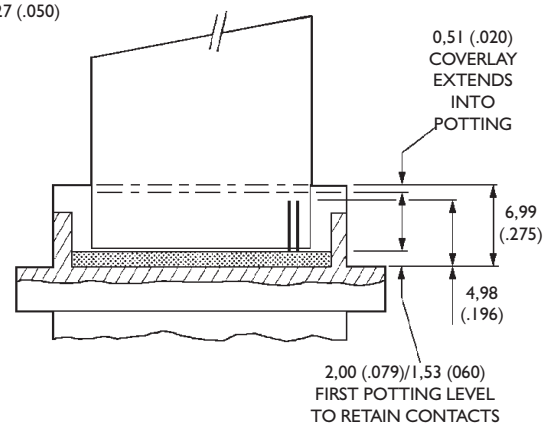


Diagram 2 illustrates how the connector is prepared with short pigtails and a special first pot which just captures the contacts. The final back potting for strength is controlled by our standard 7,00 (.275) potting fixtures.

Dimensions shown in inches (mm)
Specifications and dimensions subject to change

Custom Back Shell Systems

ITT has designed numerous back shell solutions for micro miniature interconnects for many harsh environment applications. Although ITT does not offer a standard back shell portfolio today, we can design and manufacture a range of back fittings for our MDM connector products depending on the customer requirements. Utilizing one of our partnership relationships, one of our UK based micro product groups of ITT can provide can provide custom designs utilizing proven banded systems in which the braid is captivated over a chimney style outlet. These types of back shell systems are available in different material finishes and sizes and can be provided with special process termination methods. In addition, ITT has developed a method of riveting the back fitting to the shell within the jacking area. This option guarantees 360 degree shielding effectiveness even when jackscrews or jacking posts are not being used.

Where a conduit system is preferred such as for test box environments in field locations, back fittings and a fully screened weatherproof convoluted trunking can be provided

In addition to the above ITT can provide special back potting style termination systems for environmental protection and strain relief. These types of a back shell style system are typically filled with epoxy or other encapsulating materials to provide a robust and effective back shell system.

Sealing Gaskets

We have received requests for gasket materials to seal the MDM connectors into various enclosures. We recommend that you consider wider flanged connectors together with a low cost conductive gasket to provide an adequate surface area. This combination will give you IP-66 sealing with good EMC compliance. The following dimensions for gaskets and flange dimensions are regarded as the minimum that you should consider.

Conductive elastomers generally offer a superior shielding performance when compared with alternatives as in table below.

Gasket Type	Neoprene (wire impregnated)	Silicone (wire impregnated)	Silicone (oriented wire)	Neoprene (fabric wrap)	Metallic finger stock	Metallic fibres	Conductive silicone rubber
Shielding performance	S	S	G	G	G	G	G
Temperature range	S	G	G	S	G	G	G
IP sealing	P	P	S	S	P	P	G
Compression force	G	G	G	G	G	S	S
Compression range	S	S	S	G	G	P	S
Surface texture	P	P	G	P	G	P	S
Compression set	S	S	S	S	G	P	G
Re-usability	S	S	S	S	G	P	G

* Neoprene is a trademark of Dupont P = Poor S = Satisfactory G = Good

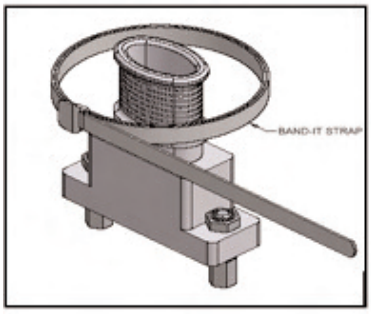
Conductive rubber gaskets can be loaded with many different metallic fillers but the choice of material is dependent upon a number of factors such as level of conductivity, shielding effectiveness, galvanic compatibility and cost.

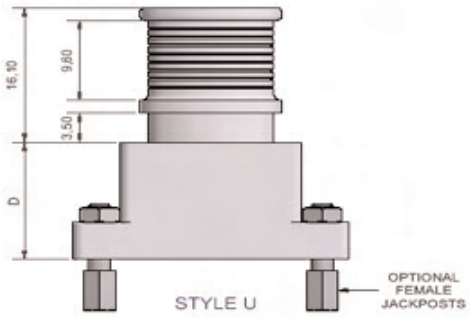
Galvanic Corrosion can occur when two dissimilar metals are in contact with one another in the presence of an electrolyte. The type of gasket material has to be assessed because of the use of metallic fillers. Many applications are dry indoor environments where corrosion is not a major concern. However, for external use, particularly marine, it is recommended that consideration be given to compatibility. The table on the next page is a summary.

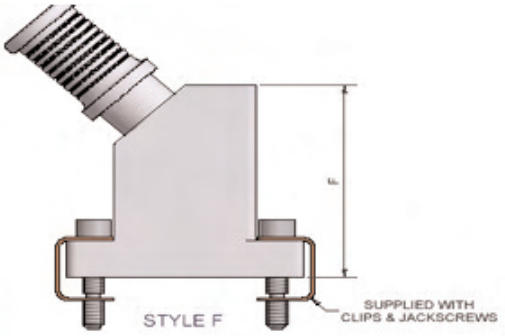
Enclosure Material	Silver/Nickel	Silver/Copper	Silver/aluminum	Inert aluminum	Silver/Glass	Silver	Nickel/Graphite	Nickel
aluminum alloys	X	X		▲	X	X		
Magnesium alloys	X	X			X	X		
Stainless steel	▲	▲	▲	▲	▲	▲	▲	▲
Copper alloys	▲	▲	▲	▲	▲	▲	▲	▲
Cadmium plating	X	X			X	X		
Tin plating		X		▲			▲	▲
Nickel plating	▲			▲	▲	▲	▲	▲
Chromium plating	▲	▲	▲	▲	▲	▲	▲	▲
Silver plating	▲	▲	▲	▲	▲	▲	▲	▲
Zinc & galvanise plating	X	X			X	X		
Titanium	▲	▲	▲	▲	▲	▲	▲	▲

▲ = good = Satisfactory X = Not recommended

Micro Metal Backshell for MDM Connectors

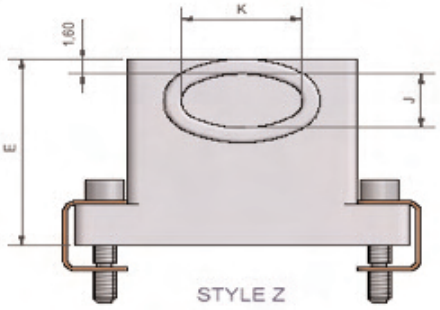


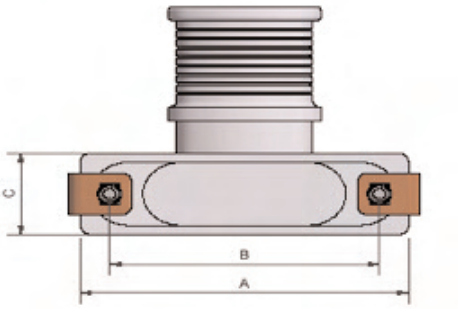




Shielded Metal Backshell

A single piece, machined aluminum shell for ITT Cannon MDM connectors. Cable braid can be fixed to the shell with the band-it strap (supplied with the backshell) to give a shielded termination. Stainless steel mounting hardware, either jackposts or low profile jack screws, comes with the backshell.





							Styles TE & SE		Style AE	
Shell Size	A	B	C	D	E	F	J	K	J	K
9	0.776 (19.7)	0.565 (14.4)	0.354 (9.0)	0.394 (10.0)	0.591 (15.0)	0.827 (21.0)	0.228 (5.8)	0.276 (7.0)	0.189 (4.8)	0.189 (4.8)
15	0.921 (23.4)	0.715 (18.2)	0.354 (9.0)	0.472 (12.0)	0.650 (16.5)	0.906 (23.0)	0.228 (5.8)	0.425 (10.8)	0.189 (4.8)	0.189 (4.8)
21	1.075 (27.3)	0.865 (22.0)	0.354 (9.0)	0.551 (14.0)	0.709 (18.0)	0.984 (25.0)	0.228 (5.8)	0.425 (10.8)	0.228 (5.8)	0.276 (7.0)
25	1.175 (29.9)	0.965 (24.5)	0.354 (9.0)	0.630 (16.0)	0.787 (20.0)	1.063 (27.0)	0.228 (5.8)	0.598 (15.2)	0.228 (5.8)	0.425 (10.8)
31	1.327 (33.7)	1.115 (28.3)	0.354 (9.0)	0.669 (17.0)	0.827 (21.0)	1.102 (28.0)	0.228 (5.8)	0.598 (15.2)	0.228 (5.8)	0.425 (10.8)
37	1.476 (37.5)	1.265 (32.1)	0.354 (9.0)	0.709 (18.0)	0.866 (22.0)	1.142 (29.0)	0.228 (5.8)	0.791 (20.1)	0.228 (5.8)	0.598 (15.2)
51	1.421 (36.1)	1.215 (30.9)	0.394 (10.0)	0.748 (19.0)	0.906 (23.0)	1.181 (30.0)	0.268 (6.8)	0.898 (22.8)	0.268 (6.8)	0.697 (17.7)
100	2.165 (55.0)	1.800 (45.7)	0.433 (11.0)	0.827 (21.0)	0.984 (25.0)	1.496 (38.0)	0.307 (7.8)	1.024 (26.0)	0.307 (7.8)	1.024 (26.0)

Materials and Finishes

Backshell Material:	Aluminum
Backshell Finish:	Electroless Nickel or Yellow Chromate over Cadmium
Hardware Material:	Stainless Steel

MDM - BT - 15TE - SJS - CAD - *

- Band tied backshell
- Shell Size
- Cable Entry
  TE = top entry
  AE = angled (45°) entry
  SE = side entry
- Hardware
  SJS = spring clips and jackscrews
  JP = jackposts
- Plating
  blank = electroless nickel
  CAD = yellow chromate over cadmium
- Modification code
  Smaller cable entry - consult factory

Dimensions shown in inches (mm)
Specifications and dimensions subject to change

"L" Code Chart

SORTED BY LENGTH

Wire Length, IN.		
Decimal	Fraction	Code
0.080		L63
0.094	3/32	L62
0.110		L65
0.125	1/8	L61
0.140		L67
0.150		L56
0.171		L66
0.187	3/16	L17
0.190		L57
0.210		L59
0.250	1/4	L39
0.312	3/8	L60
0.375	3/8	L58
0.380		L64
0.500	1/2	L1
0.625	5/8	L12
0.750	3/4	L4
1.000		L2
1.500		L7
2.000		L6
2.250		L25
2.500		L16
3.000		L10
3.500		L15
4.000		L11
4.500		L28
5.000		L9
6.000		L3
7.000		L8
8.000		L18
9.000		L45
10.000		L13
11.500		L52
12.000		L4
15.000		L46
18.000		L55
20.000		L5

SORTED BY CODE

Wire Length, IN.		
Code	Decimal	Fraction
L1	0.500	1/2
L2	1.000	
L3	6.000	
L4	12.000	
L5	20.000	
L6	2.000	
L7	1.500	
L8	7.000	
L9	5.000	
L10	3.000	
L11	4.000	
L12	0.625	5/8
L13	10.000	
L14	0.750	3/4
L15	3.500	
L16	2.500	
L17	0.187	3/16
L18	8.000	
L25	2.250	
L28	4.500	
L39	0.250	1/4
L45	9.000	
L46	15.000	
L52	11.500	
L55	18.000	
L56	0.150	
L57	0.190	
L58	0.375	3/8
L59	0.210	
L60	0.312	5/16
L61	.0125	1/8
L62	0.094	3/32
L63	0.080	
L64	0.380	
L65	0.110	
L66	0.171	
L67	0.140	

#25AWG, SOLID COPPER WIRE PER QQ-W-343, TYPE "S", GOLD PLATED PER MIL-G-45204, TYPE II GRADE C OR D, CLASS 1 (50 MICROINCHES MINIMUM)

Nano "L" Code Charts on page D-80.

"L" Code Chart (for Nano products only)

SORTED BY LENGTH

Wire Length, IN.		
Decimal	Fraction	Code
0.080		L63
0.094	3/32	L62
0.110		L65
0.125	1/8	L61
0.140		L67
0.150		L56
0.171		L66
0.187	3/16	L17
0.190		L57
0.210		L59
0.250	1/4	L39
0.312	3/8	L60
0.375	3/8	L58
0.380		L64
0.500	1/2	L1
0.625	5/8	L12
0.750	3/4	L4
1.000		L2
1.500		L7
2.000		L6
2.250		L25
2.500		L16
3.000		L10
3.500		L15
4.000		L11
4.500		L28
5.000		L9
6.000		L3
7.000		L8
8.000		L18
9.000		L45
10.000		L13
11.500		L52
12.000		L4
15.000		L46
18.000		L55
20.000		L5

SORTED BY CODE

Wire Length, IN.		
Code	Decimal	Fraction
L1	0.500	1/2
L2	1.000	
L3	6.000	
L4	12.000	
L5	20.000	
L6	2.000	
L7	1.500	
L8	7.000	
L9	5.000	
L10	3.000	
L11	4.000	
L12	0.625	5/8
L13	10.000	
L14	0.750	3/4
L15	3.500	
L16	2.500	
L17	0.187	3/16
L18	8.000	
L25	2.250	
L28	4.500	
L39	0.250	1/4
L45	9.000	
L46	15.000	
L52	11.500	
L55	18.000	
L56	0.150	
L57	0.190	
L58	0.375	3/8
L59	0.210	
L60	0.312	5/16
L61	.125	1/8
L62	0.094	3/32
L63	0.080	
L64	0.380	
L65	0.110	
L66	0.171	
L67	0.140	

#30AWG, SOLID COPPER WIRE PER QQ-W-343, TYPE "S", GOLD PLATED PER MIL-G-45204, TYPE II GRADE C OR D, CLASS 1 (50 MICROINCHES MINIMUM)

"H" Code Charts

16878/4

Wire, Electrical, Polyetrafluorethylene (PTFE) Insulated, 200 Degrees C, 600 Volts, Extruded Insulation

Length	Yellow	White	System 1
1	030	C30	A30
2	024	C24	A24
3	020	C20	027
4	–	C33	033
5	031	C31	A31
6	019	047	016
8	026	C26	034
9	015	C15	A15
10	029	C29	025
12	028	008	002
16	039	C39	A39
17	036	C36	A36
18	001	044	003
20	038	C38	023
21	055	C55	A55
24	009	045	004
30	010	C10	005
35	018	C18	A18
36	011	058	006
40	037	C37	A37
42	012	021	A12
48	013	C13	048
50	040	C40	A40
60	014	C14	056
72	017	059	046
80	032	C32	A32
92	022	C22	A22
96	035	C35	A35
120	042	C42	041
180	043	C43	A43

Nano "H" Code Charts on page 82.

22759/11-26

Wire, Electrical, Fluoropolymer-Insulated, Extruded TFE, Silver-Coated Copper Conductor, 600 Volt

Length	White	10 Color Repeat	System 1
1	G30	Y30	H30
2	G24	Y24	H24
3	G20	Y20	H20
4	G33	Y33	H33
5	G31	Y31	H31
6	065	Y19	072
8	G26	Y26	H26
9	G15	Y15	H15
10	G29	Y29	H29
12	066	Y28	073
16	G39	Y39	H39
17	G36	Y36	H36
18	067	Y01	074
20	G38	Y38	H38
21	G55	Y55	H55
24	068	Y09	075
30	G10	Y10	H10
35	G18	Y18	H18
36	069	Y11	076
40	G37	Y37	H37
42	G12	Y12	H12
48	070	Y13	077
50	G40	Y40	H40
60	G14	Y14	H14
72	071	Y17	078
80	G32	Y32	H32
92	G22	Y22	H22
96	G35	Y35	H35
120	G42	Y42	H42
180	G43	Y43	H43

22759/33-26

Wire, Electrical, Fluoropolymer-Insulated, Crosslinked Modified, ETFE, Lightweight, Silver-Coated, High-Strength Copper Alloy 200 Degrees C, 600 Volt

Length	White	10 Color Repeat	System 1
1	V30	W30	X30
2	V24	W24	X24
3	V20	W20	X20
4	V33	W33	X33
5	V31	W31	X31
6	V19	W19	X19
8	V26	W26	X26
9	V15	W15	X15
10	V29	W29	X29
12	V28	W28	X28
16	V39	W39	X39
17	V36	W36	X36
18	V01	W01	X01
20	V38	W38	X38
21	V55	W55	X55
24	V09	W09	X09
30	V10	W10	X10
35	V18	W18	X18
36	V11	W11	X11
40	V37	W37	X37
42	V12	W12	X12
48	V13	W13	X13
50	V40	W40	X40
60	V14	W14	X14
72	V17	W17	X17
80	V32	W32	X32
92	V22	W22	X22
96	V35	W35	X35
120	V42	W42	X42
180	V43	W43	X43

"H" Code Charts (for Nano products only)

MIL-W-16878/6

Wire, Electrical, Polyetrafluorethylene (PTFE) Insulated, 200 Degrees C, 250 Volts, Extruded Insulation

Length	Yellow	White	System 1
1	030	C30	A30
2	024	C24	A24
3	020	C20	027
4	–	C33	033
5	031	C31	A31
6	019	047	016
8	026	C26	034
9	015	C15	A15
10	029	C29	025
12	028	008	002
16	039	C39	A39
17	036	C36	A36
18	001	044	003
20	038	C38	023
21	055	C55	A55
24	009	045	004
30	010	C10	005
35	018	C18	A18
36	011	058	006
40	037	C37	A37
42	012	021	A12
48	013	C13	048
50	040	C40	A40
60	014	C14	056
72	017	059	046
80	032	C32	A32
92	022	C22	A22
96	035	C35	A35
120	042	C42	041
180	043	C43	A43

MIL-STD-681 Wire Color Code

Reference Data

PIN No.	MIL-STD-681 No.	Base Color	First Stripe	Second Stripe	Third Stripe	PIN No.	MIL-STD-681 No.	Base Color	First Stripe	Second Stripe	Third Stripe
1*	0	BLK				51	957	WHT	GRN	VIO	
2*	1	BRN				52	958	WHT	GRN	GRY	
3*	2	RED				53	967	WHT	BLU	VIO	
4*	3	ORN				54	968	WHT	BLU	GRY	
5*	4	YEL				55	978	WHT	VIO	GRY	
6*	5	GRN				56	9012	WHT	BLK	BRN	RED
7*	6	BLU				57	9013	WHT	BLK	BRN	ORN
8*	7	VIO				58	9014	WHT	BLK	BRN	YEL
9*	8	GRY				59	9015	WHT	BLK	BRN	GRN
10*	9	WHT				60	9016	WHT	BLK	BRN	BLU
11	90	WHT	BLK			61	9017	WHT	BLK	BRN	VIO
12	91	WHT	BRN			62	9018	WHT	BLK	BRN	GRY
13	92	WHT	RED			63	9023	WHT	BLK	RED	ORN
14	93	WHT	ORN			64	9024	WHT	BLK	RED	YEL
15	94	WHT	YEL			65	9025	WHT	BLK	RED	GRN
16	95	WHT	GRN			66	9026	WHT	BLK	RED	BLU
17	96	WHT	BLU			67	9027	WHT	BLK	RED	VIO
18	97	WHT	VIO			68	9028	WHT	BLK	RED	GRY
19	98	WHT	GRY			69	9034	WHT	BLK	ORN	YEL
20	901	WHT	BLK	BRN		70	9035	WHT	BLK	ORN	GRN
21	902	WHT	BLK	RED		71	9036	WHT	BLK	ORN	BLU
22	903	WHT	BLK	ORN		72	9037	WHT	BLK	ORN	VIO
23	904	WHT	BLK	YEL		73	9038	WHT	BLK	ORN	GRY
24	905	WHT	BLK	GRN		74	9045	WHT	BLK	YEL	GRN
25	906	WHT	BLK	BLU		75	9046	WHT	BLK	YEL	BLU
26	907	WHT	BLK	VIO		76	9047	WHT	BLK	YEL	VIO
27	908	WHT	BLK	GRY		77	9048	WHT	BLK	YEL	GRY
28	912	WHT	BRN	RED		78	9056	WHT	BLK	GRN	BLU
29	913	WHT	BRN	ORN		79	9057	WHT	BLK	GRN	VIO
30	914	WHT	BRN	YEL		80	9058	WHT	BLK	GRN	GRY
31	915	WHT	BRN	GRN		81	9067	WHT	BLK	BLU	VIO
32	916	WHT	BRN	BLU		82	9068	WHT	BLK	BLU	GRY
33	917	WHT	BRN	VIO		83	9078	WHT	BLK	VIO	GRY
34	918	WHT	BRN	GRY		84	9123	WHT	BRN	RED	ORN
35	923	WHT	RED	ORN		85	9124	WHT	BRN	RED	YEL
36	924	WHT	RED	YEL		86	9125	WHT	BRN	RED	GRN
37	925	WHT	RED	GRN		87	9126	WHT	BRN	RED	BLU
38	926	WHT	RED	BLU		88	9127	WHT	BRN	RED	VIO
39	927	WHT	RED	VIO		89	9128	WHT	BRN	RED	GRY
40	928	WHT	RED	GRY		90	9134	WHT	BRN	ORN	YEL
41	934	WHT	ORN	YEL		91	9135	WHT	BRN	ORN	GRN
42	935	WHT	ORN	GRN		92	9136	WHT	BRN	ORN	BLU
43	936	WHT	ORN	BLU		93	9137	WHT	BRN	ORN	VIO
44	937	WHT	ORN	VIO		94	9138	WHT	BRN	ORN	GRY
45	938	WHT	ORN	GRY		95	9145	WHT	BRN	YEL	GRN
46	945	WHT	YEL	GRN		96	9146	WHT	BRN	YEL	BLU
47	946	WHT	YEL	BLU		97	9147	WHT	BRN	YEL	VIO
48	947	WHT	YEL	VIO		98	9148	WHT	BRN	YEL	GRY
49	948	WHT	YEL	GRY		99	9156	WHT	BRN	GRN	BLU
50	956	WHT	GRN	BLU		100	9157	WHT	BRN	GRN	VIO

* 10 colors repeat is the standard wire color code for MIL-DTL-83513 connectors.