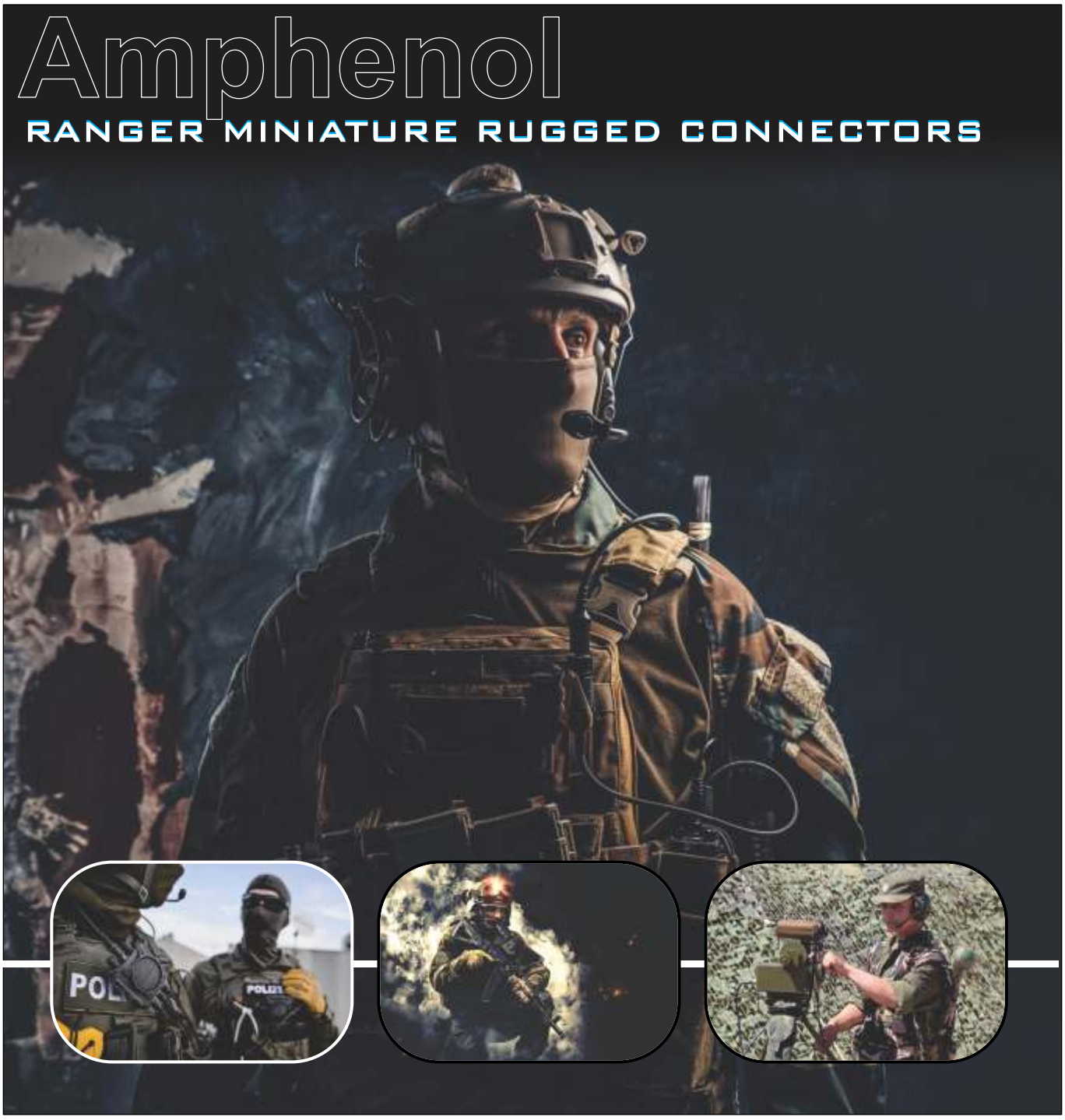
Amphenol

Ranger Miniature Rugged Connector Series
01 Rev 08 - 23



Pin & Socket Connector - Push/Pull or Break Away

Ranger's quick and easy mate and unmate feature makes it ideal for use in soldier - worn, harsh environment applications.

The rugged, lightweight, multipurpose connector can be used for signal and power application. Multi - pin configurations.

FEATURES & BENEFITS:

- Push/Pull Locking and Breakaway
- Function IP - 68 & IP69K, >5000 mating cycles
- Operating Temp Range: - 60°F to 257°F (-51°C to +125°C)
- Aluminum /Brass Ruthenium plated Body - lightweight yet rugged
- Diameter of male and female connector is smaller than a penny
- Custom cable assembly option

How to Order

Example part number: NX-A10YAR-P03XJG0-0000

1	2	3	4	5	6	7		8	9	10	11		12
Connector	Type	Style	Size	Version	Keying	Housing Material	Insulator	Contact Count	Contact Type	Contact Diameter	Termination Cross Section		Ground Tag
NX-	A	1	0	Y	A	R	P	03	X	J	G	0-000	0

1. Connector

NX-	Ranger

2. Type

A	Breakaway Plug
K	In line Receptacle
S (Standard)	Push Pull Plug
G	Push Pull Receptacle
C (HD)	Break away Plug with screw Lock

3. Style

1	Cable mount
8	Low profile Outside Rear panel (SD)
K	LowProfile Inside Rear Panel
W	Docking (Panel) Plug
6	Cable & Panel Mount
C	For Screw Lock (HD)
S	For Screw Lock with cable (HD)

4. Size

Varies Based on Part Number
*Standard
0/1/A/2/3/E
*HD
C(00)0/1

5. Version

W	High Density
Y	Standard

6. Keying

A	Brown
B	Red
C	Blue
D	Green

7. Housing Material & Finish

R-	Ruthenium Over Nickel (Standard–Aluminum)
M-	Ruthenium Over Nickel (HD–Brass)

8. Contact Count

Standard	
Size 0	02/03/04/05/07/09/10
Size 1	05/D8/14/16
Size A	10/19
Size 2	06/19/26
Size 3	04/18/26/27
Size E	55
HD	
Size C (00)	02/04/07
Size 0	08/09/12/16
Size 1	20/27

9. Contact Type

U	Socket w/PC Tail
V	Pin w/PC Tail
W	Socket w/Solder cup
X	Pin w/Solder cup

10. Contact Diameter

B	0.3mm
C	0.5mm
F	0.7mm
J	0.9mm
P	1.3mm
T	2.0mm
M (SD)	10 Pin 6x0.3/4x0.5mm
M (HD)	9 Pin 3x0.3/6x0.7mm
M (HD)	12 Pin 10x0.3/2x0.7mm
M (HD)	20 Pin 16x0.3/4x0.7mm

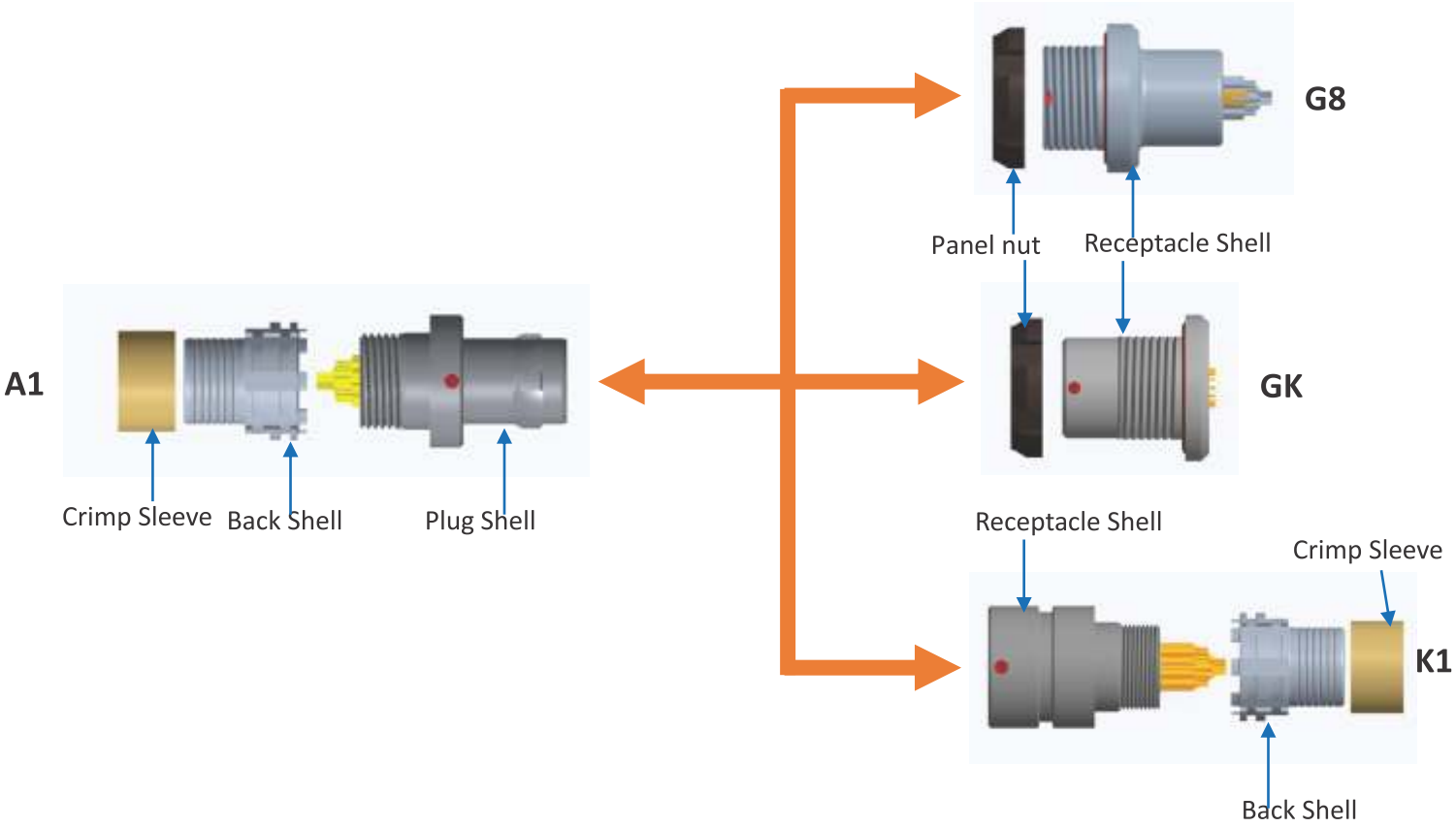
11. Termination Cross Section

C	28AWG
D	26AWG
E	24AWG
G	22AWG
H	20AWG
S	14AWG
M (SD)	28AWG 24AWG
M (HD)	28AWG 22AWG
0	PC Tail Contact

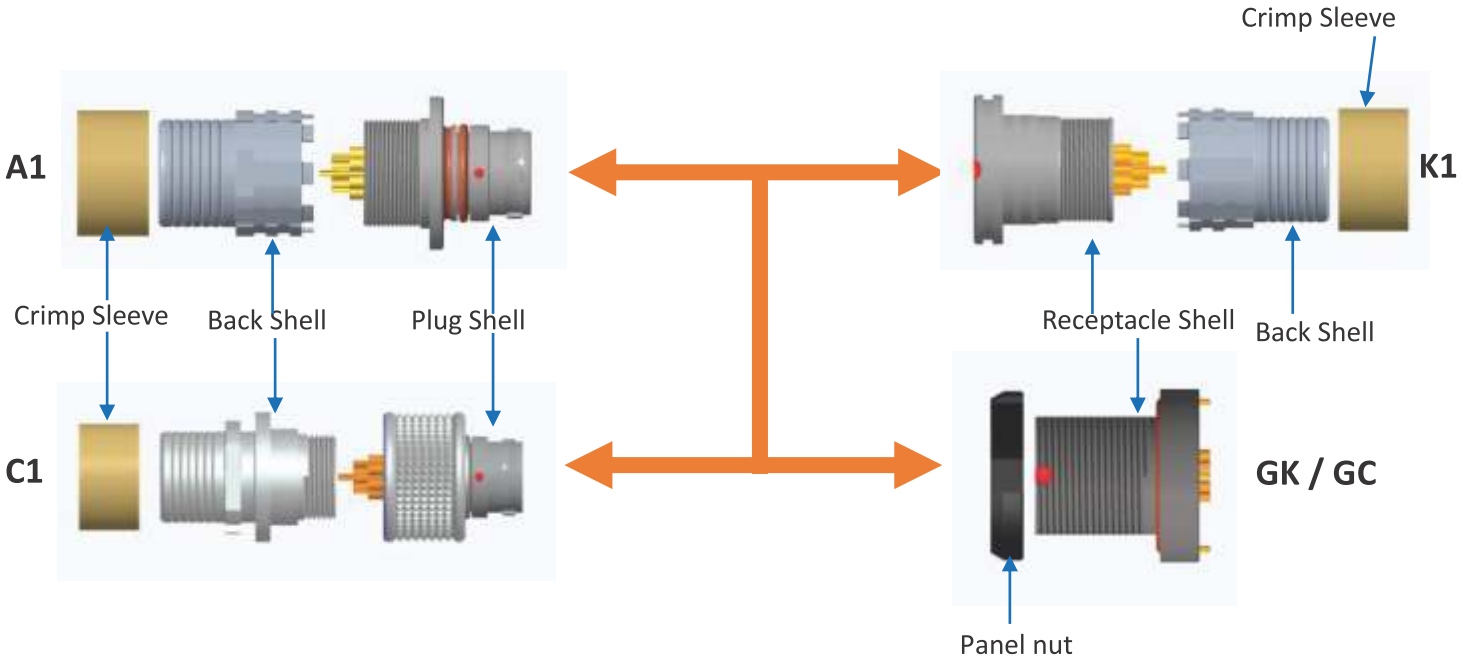
12. Ground Tag

0-	No
L-	yes

STANDARD DENSITY



HIGH DENSITY



STANDARD DENSITY

RECEPTACLE / IN-LINE RECEPTACLE		PLUG	
IN-LINE RECEPTACLE Style K1			PUSH-PULL PLUG Style S1
RECEPTACLE Style GK			BREAK-AWAY PLUG Style A1
RECEPTACLE Style G6			PANEL PLUG Style GW
RECEPTACLE Style G8			

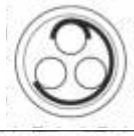
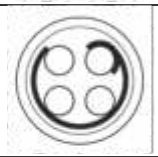
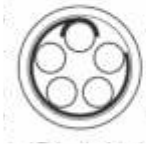
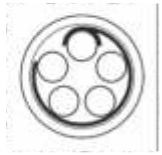
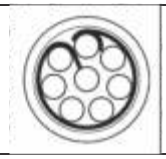
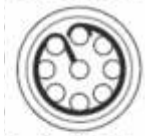
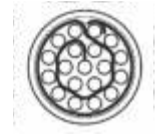
HIGH DENSITY

RECEPTACLE / IN-LINE RECEPTACLE		PLUG		SCREW-LOCK FUNCTION	BREAK-AWAY FUNCTION
Style GK			Style A1		✓
Style G6					
Style K1					
Style GK			Style C1		✓
Style GS					
Style K1					
Style GC			Style A1		✓
Style GS					
Style KC					
Style GC			Style C1	✓	✓
Style GS					
Style KC					

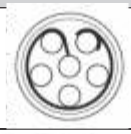
CODE	COLOUR CODING	COLOUR
A		Light Brown
B		Red
C		Blue
D		Green

No colour coding in size 4.5(E)

Contact Configuration (Standard Density)

Number of Contacts	Size 0		Size1		SizeA	
	Male	Female	Male	Female	Male	Female
02						
03						
04						
05						
07						
08*						
09*						
10						
14*						
16*						
19						

Contact Configuration (Standard Density)

Number of Contacts	Size 2		Size 3		Size E	
	Male	Female	Male	Female	Male	Female
06						
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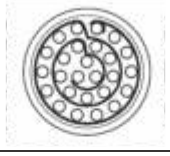
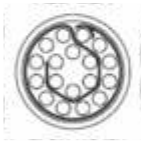
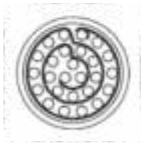
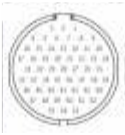
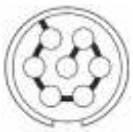
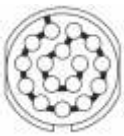
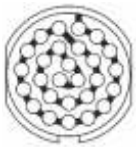
26						
04						
18						
26						
37						
55						

Number of Contacts	Size C (00)		Size 0		Size 1	
	Male	Female	Male	Female	Male	Female
02						
04						
07						
D8						
09*						
12*						
16*						
20						
27*						

*Completely tooled.
Contact Amphenol India for availability of other layouts.

Size	Number of Contacts	Available Connector Styles				Contact Type		Part Number Key				Contact Diameter	Single Contact Nominal Current	Test Voltage Contact to Contact	Nominal Voltage	Termination Diameter	Termination cross section	
							Termination					mm	A	kVeff	kVrms	mm	AWG	mm2
0	02	G8	-	-	K1	Socket	Solder	W	J	G	0	0.90	10	1.20	0.40	0.85	22	0.38
		-			-		PC Tail	U	J	0	0		-			-	-	-
		S1	A1	GW	-	Pin	Solder	X	J	G	0		10			0.85	22	0.38
		-	-				PC tail	V	J	0	0		7			0.7	-	-
	03	-	GK	G6	K1	Socket	Solder	W	J	G	0	0.90	10	1.20	0.40	0.85	22	0.38
				-	-		PC Tail	U	J	0	0		7			0.7	-	-
		S1	A1	GW	-	Pin	Solder	X	J	G	0		10			0.85	22	0.38
		-	-				PC tail	V	J	0	0		7			0.7	-	-
	04	G8	GK	G6	K1	Socket	Solder	W	F	G	0	0.70	7	0.90	0.30	0.85	22	0.38
				-	-		PC Tail	U	F	0	0		5			0.5	-	-
		S1	A1	GW	-	Pin	Solder	X	F	G	0		7			0.85	22	0.38
		-	-				PC tail	V	F	0	0		5			0.5	-	-
	05	-	-	-	K1	Socket	Solder	W	F	G	0	0.70	7	0.90	0.30	0.85	22	0.38
		G8	-		-		PC Tail	U	F	0	0		5			0.5	-	-
		-	A1	GW	-	Pin	Solder	X	F	G	0		7			0.85	22	0.38
		-	-				PC tail	V	F	0	0		5			0.5	-	-
	07	G8	GK	G6	K1	Socket	Solder	W	C	D	0	0.50	5	0.90	0.30	0.65	26	0.15
				-	-		PC Tail	U	C	0	0		5			0.5	-	-
		S1	A1	GW	-	Pin	Solder	X	C	D	0		5			0.65	26	0.15
		-	-				PC tail	V	C	0	0		5			0.5	-	-
	09	G8	GK	G6	K1	Socket	Solder	W	C	D	0	0.50	5	0.60	0.20	0.65	26	0.15
				-	-		PC Tail	U	C	0	0		5			0.5	-	-
		S1	A1	GW	-	Pin	Solder	X	C	D	0		5			0.65	26	0.15
		-	-				PC tail	V	C	0	0		5			0.5	-	-
	10	G8	GK	G6	K1	Socket	Solder	W	C	D	0	0.50	5	0.60	0.20	0.65	26	0.15
				-	-		PC Tail	U	C	0	0		5			0.5	-	-
		S1	A1	GW	-	Pin	Solder	X	C	D	0		5			0.65	26	0.15
		-	-				PC tail	V	C	0	0		5			0.5	-	-

Size	Number of Contacts	Available Connector Styles				Contact Type		Part Number Key				Contact Diameter	Single Contact Nominal Current	Test Voltage Contact to Contact	Nominal Voltage	Termination Diameter	Termination cross section	
							Termination					mm	A	kVeff	kVrms	mm	AWG	mm2
1	05	G8	GK	G6	K1	Socket	Solder	W	J	G	0	0.90	10	1.35	0.45	0.85	22	0.38
				-	-		PC Tail	U	J	0	0		7			0.7	-	-
		S1	A1	-	-	Pin	Solder	X	J	G	0		10			0.85	22	0.38
		-	-				PC tail	V	J	0	0		7			0.7	-	-
	08	G8	GK	G6	K1	Socket	Solder	W	F	G	0	0.70	7	1.00	0.333	0.85	22	0.38
				-	-		PC Tail	U	F	0	0		5			0.5	-	-
		S1	A1	-	-	Pin	Solder	X	F	G	0		7			0.85	22	0.38
		-	-				PC tail	V	F	0	0		5			0.5	-	-
	14	G8	GK	G6	K1	Socket	Solder	W	C	D	0	0.50	5	0.60	0.20	0.65	26	0.15
				-	-		PC Tail	U	C	0	0		5			0.5	-	-
		S1	A1	-	-	Pin	Solder	X	C	D	0		5			0.65	26	0.15
		-	-				PC tail	V	C	0	0		5			0.5	-	-
	16	G8	GK	G6	K1	Socket	Solder	W	C	D	0	0.50	5	0.60	0.20	0.65	26	0.15
				-	-		PC Tail	U	C	0	0		5			0.5	-	-
		S1	A1	-	-	Pin	Solder	X	C	D	0		5			0.65	26	0.15
		-	-				PC tail	V	C	0	0		5			0.5	-	-
A (1.5)	10	G8	GK	G6	K1	Socket	Solder	W	F	G	0	0.70	7	0.90	0.30	0.85	22	0.38
				-	-		PC Tail	U	F	0	0		5			0.5	-	-
		S1	A1	-	-	Pin	Solder	X	F	G	0		7			0.85	22	0.38
		-	-				PC tail	V	F	0	0		5			0.5	-	-
	19	G8	GK	G6	K1	Socket	Solder	W	C	D	0	0.50	5	0.80	0.275	0.65	26	0.15
				-	-		PC Tail	U	C	0	0		5			0.5	-	-
		S1	A1	-	-	Pin	Solder	X	C	D	0		5			0.65	26	0.15
		-	-				PC tail	V	C	0	0		5			0.5	-	-
2	06	G8	GK	G6	K1	Socket	Solder	W	P	H	0	1.30	14	1.50	0.50	1.1	20	0.5
				-	-		PC Tail	U	P	0	0		7			0.7	-	-
		S1	A1	-	-	Pin	Solder	X	P	H	0		14			1.1	20	0.5
		-	-				PC tail	V	P	0	0		7			0.7	-	-
	19	G8	GK	G6	K1	Socket	Solder	W	F	G	0	0.70	7	1.00	0.333	0.85	22	0.38
				-	-		PC Tail	U	F	0	0		5			0.5	-	-
		S1	A1	-	-	Pin	Solder	X	F	G	0		7			0.85	22	0.38
		-	-				PC tail	V	F	0	0		5			0.5	-	-
	26	G8	GK	G6	K1	Socket	Solder	W	C	D	0	0.50	5	0.90	0.300	0.65	26	0.15
				-	-		PC Tail	U	C	0	0		5			0.5	-	-
		S1	A1	-	-	Pin	Solder	X	C	D	0		5			0.65	26	0.15
		-	-				PC tail	V	C	0	0		5			0.5	-	-

Size	Number of Contacts	Available Connector Styles				Contact Type		Part Number Key				Contact Diameter	Single Contact Nominal Current	Test Voltage Contact to Contact	Nominal Voltage	Termination Diameter	Termination cross section	
							Termination					mm	A	kVeff	kVrms	mm	AWG	mm2
3	04	G8	GK	G6	K1	Socket	Solder	W	T	S	0	2.00	22	1.65	0.55	2.4	14	2.5
				-	-		PC Tail	U	T	0	0		7			0.7	-	-
		S1	A1	-	-	Pin	Solder	X	T	S	0		22			2.4	14	2.5
		-	-				PC tail	V	T	0	0		7			0.7	-	-
	18	G8	GK	G6	K1	Socket	Solder	W	J	G	0	0.90	10	1.35	0.45	0.85	22	0.38
				-	-		PC Tail	U	J	0	0		7			0.7	-	-
		S1	A1	-	-	Pin	Solder	X	J	G	0		10			0.85	22	0.38
		-	-				PC tail	V	J	0	0		7			0.7	-	-
	26	G8	GK	G6	K1	Socket	Solder	W	F	G	0	0.70	7	1.00	0.333	0.85	22	0.38
				-	-		PC Tail	U	F	0	0		5			0.5	-	-
		S1	A1	-	-	Pin	Solder	X	F	G	0		7			0.85	22	0.38
		-	-				PC tail	V	F	0	0		5			0.5	-	-
	37	G8	GK	G6	K1	Socket	Solder	W	C	D	0	0.50	5	0.90	0.30	0.65	26	0.15
				-	-		PC Tail	U	C	0	0		5			0.5	-	-
		S1	A1	-	-	Pin	Solder	X	C	D	0		5			0.65	26	0.15
		-	-				PC tail	V	C	0	0		5			0.5	-	-
E (4.5)	55	G8	GK	G6	K1	Socket	Solder	W	F	G	0	0.70	7	1.00	0.333	0.85	22	0.38
				-	-		PC Tail	U	F	0	0		5			0.5	-	-
		S1	A1	-	-	Pin	Solder	X	F	G	0		7			0.85	22	0.38
		-	-				PC tail	V	F	0	0		5			0.5	-	-

Size	Number of Contacts	Available Connector Styles					Contact Type		Part Number Key				Contact Diameter	Single Contact Nominal Current	Test Voltage Contact to Contact	Nominal Voltage	Termination Diameter	Termination cross section	
								Termination					mm	A	kVeff	kVrms	mm	AWG	mm2
C (00)	02	K1	G6	GK	GC	GS	Socket	Solder	W	C	E	0	0.50	3	1.20	0.40	0.3	24	0.25
		-	-			-		PC Tail	U	C	0	0						-	-
		A1	-	-	C1	-	Pin	Solder	X	C	E	0						24	0.25
	04	K1	G6	GK	GC	GS	Socket	Solder	W	B	C	0	0.30	1	0.90	0.30	0.3	28	0.08
		-	-			-		PC Tail	U	B	0	0						-	-
		A1	-	-	C1	-	Pin	Solder	X	B	C	0						28	0.08
	07	K1	G6	GK	GC	GS	Socket	Solder	W	B	C	0	0.30	1	0.75	0.25	0.3	28	0.08
		-	-			-		PC Tail	U	B	0	0						-	-
		A1	-	-	C1	-	Pin	Solder	X	B	C	0						28	0.08
0	D8	K1	G6	GK	GC	GS	Socket	Solder	W	B	E	0	0.30	1	0.75	0.25	0.3	28	0.08
		-	-			-		PC Tail	U	B	0	0						-	-
		A1	-	-	C1	-	Pin	Solder	X	B	E	0						28	0.08
	09	K1	G6	GK	GC	GS	Socket	Solder	W	M	M	0	3x0.3 6x0.7	1 5	0.75	0.25	0.3 0.8	28 22	0.08 0.38
		-	-			-		PC Tail	U	M	0	0							
		A1	-	-	C1	-	Pin	Solder	X	M	M	0							
	12	K1	G6	GK	GC	GS	Socket	Solder	W	M	M	0	10x0.3 2x0.7	1 5	0.75	0.25	0.3 0.8	28 22	0.08 0.38
		-	-			-		PC Tail	U	M	0	0							
		A1	-	-	C1	-	Pin	Solder	X	M	M	0							
	16	K1	G6	GK	GC	GS	Socket	Solder	W	B	C	0	0.30	1	0.75	0.25	0.3	28	0.08
		-	-			-		PC Tail	U	B	0	0						-	-
		A1	-	-	C1	-	Pin	Solder	X	B	C	0						28	0.08
1	20	K1	G6	GK	GC	GS	Socket	Solder	W	M	M	0	16x0.3 4x0.7	1 5	0.75	0.25	0.3 0.8	28 22	0.08 0.38
		-	-			-		PC Tail	U	M	0	0							
		A1	-	-	C1	-	Pin	Solder	X	M	M	0							
	27	K1	G6	GK	GC	GS	Socket	Solder	W	B	C	0	0.30	1	0.75	0.25	0.3	28	0.08
		-	-			-		PC Tail	U	B	0	0						-	-
		A1	-	-	C1	-	Pin	Solder	X	B	C	0						28	0.08

Environmental & Testing

Type	Performance	Standard
Tightness	IPX8 / 1m 120 min IPX9K	ISO 20653:2013 / MIL-STD-810G:2008 512.5 ISO 20653: 2013
Sand and dust	Blowing sand and dust IP6KX (settling dust)	MIL-STD-810G:2008 510.5 Procedure I / II ISO 20653:2013
Operating temperature	–51 °C up to +125 °C	IEC 60512-11-9:2002 IEC 60512-11-10:2002
Thermal shock	–65 °C up to +150 °C	EIA 364-32-E, IEC 60068-2-14
Humidity cyclic	85 % up to 95 %, 28 °C up to 71 °C	MIL-STD-1344A Method 1002.2 Type III, IEC 60068-2-38
Low pressure (rapid decom-pression)	59.1 kPa to 18.8 kPa	AECTP 300, 312 Procedure III (STANAG 4370)
Low pressure	57.2 kPa, –55 °C	MIL-STD-810G:2008 500.5 IEC 60068-2-40
Icing	Rime ice 6 mm	MIL-STD-810G:2008 521.3
Corrosion resistance	96 h salt mist, 5 % salt solution, 35 °C	EIA-364-26B STANAG 4370, AECTP 300-309 MIL-STD-810G:2008 509.5
Mould growth	European fungus	IEC 60068-2-10:2005
Solar radiation		IEC 60068-2-5:2018
Chemical endurance	Several substances2	ISO 16750-5:2010-04

Mechanical Data

Type	Performance	Standard
Mechanical endurance	5,000 mating cycles	IEC 60512-5-9-a EIA-364-09
Vibration		MIL-STD 1344 Method 2005 EIA-364-28
Shock	100 g amplitude, halfsinepulseof3ms, no discontinuity>1µs	MIL-STD 1344 Method 2004 EIA-364-27

Electrical Data

Type	Performance	Standard
Contact resistance over 5,000 mating cycles	Contact diameter / Resistance Ø0.5mm<5mOhm Ø0.7mm<4mOhm Ø0.9mm<4mOhm Ø1.3mm<3mOhm Ø2.0mm<3mOhm	IEC 60512-2-1
Shell resistance	< 5 mOhm	IEC 60512-2-1
Insulation resistance	> 100 MOhm	IEC 60512-3-1
Shielding effectiveness	> 65 dB	VG 95214-11

Material & Surface Treatments

Type	Material	Surface
Housing (Conductive parts)	Aluminum Alloy	Ruthenium over electroless nickel
Housing / nut (Nonconductive parts)	Aluminum Alloy	Black anodized
Back shell (Push-Pull plug)	Aluminum Alloy	Ruthenium over electroless nickel
Back shell (Break-Away plug and in-line receptacle)	Aluminum Alloy	Electroless nickel
EMC-locking ring	Copper Alloy	Electrodeposited nickel
Crimp sleeve	Copper Alloy	Electrodeposited nickel
Insulator	PEEK (standard)	
Pin contact	Copper Alloy	1.27 µm gold over electrodeposited nickel
Socket contact	Copper Alloy	1.27 µm gold over electrodeposited nickel
O-rings	Silicon Rubber	

Environmental & Testing

Type	Performance	Standard
Tightness	IPX8 / 20m 120min IPX9K	ISO 20653:2013-02 MIL-STD-810G:2008-10 512.5 ISO 20653: 2013-02
Sand and dust	Blowing sand and dust IP6KX (settling dust)	MIL-STD-810G:2008-10 510.5 Procedure I / II ISO 20653:2013-02
Operating temperature	–51°C up to +125°C [1]	IEC 60068-2-1:2007-05 IEC 60068-2-2:2007-10
Thermal shock	–51°C up to +125°C	MIL-STD-810G:2014-04 503.6
Humidity cyclic	85% r.h. up to 95% r.h., 28°C up to 71°C	EIA-364-31E:2017-04 Method V
Low pressure (rapid decompression)	59.1 kPa to 18.8 kPa	NATO-AECTP 300:2006-01 312 Procedure III
Low pressure (operation)	57.2 kPa, –55° C	MIL-STD-810G:2008-10 500.5
Icing	Rime ice 6 mm	MIL-STD-810G:2008-10 521.3
Corrosion resistance	96 h salt mist, 5 % salt solution, 35° C (2 cycles – 24h spray / 24h dry)	MIL-STD-810G:2008-10 509.5
Mould Growth	European fungus	IEC 60068-2-10:2005-06
Solar radiation	Ground level, procedure A	IEC 60068-2-5:2018-04

Mechanical Data

Type	Performance	Standard
Mechanical endurance	5,000 mating cycles	IEC 60512-9-1:2010-03
Vibration	15g (sine) 10 – 2,000Hz No discontinuity > 1µs	EIA-364-28F:2011-02
Shock	50 g amplitude, half sine pulse of 6 ms, no discontinuity > 1 µs	EIA-364-27C:2011-06

Electrical Data

Type	Performance	Standard
Contact resistance over 5,000 mating cycles	Contact diameter / Resistance Ø0.3mm < 10mOhm Ø0.5mm < 5mOhm Ø0.7mm < 4mOhm	IEC 60512-2-1
Shell resistance	< 5 mOhm	IEC 60512-2-1
Insulation resistance	> 100 MOhm	IEC 60512-3-1
Shielding effectiveness	> 65 dB	IEC 62153-4-4

Material & Surface Treatments

Type	Material	Surface
Housing (Conductive parts)	Brass	Ruthenium over electroless nickel
Housing / nut (Nonconductive parts)	Brass	Black zinc nickel
Back shell (Push-Pull plug)	Brass	Ruthenium over electroless nickel
Back shell (Break-Away plug and in-line receptacle)	Brass	Electroless nickel
EMC-locking ring	Copper Alloy	Electrodeposited nickel
Crimp sleeve	Copper Alloy	Electrodeposited nickel
Insulator	PEEK (standard)	
Pin contact	Copper Alloy	1.27 µm gold over electrodeposited nickel
Socket contact	Copper Alloy	1.27 µm gold over electrodeposited nickel
O-rings	Fluorosilicone Rubber	

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