

Interconnect Technologies & Solutions

For over 90 years, ITT has been developing innovative solutions for harsh environment applications. We have a proven track record of demonstrating our expertise and commitment to the industrial industry, offering the broadest portfolio of interconnect products.

Our interconnect range include sealed circulars, plastic and metal shell bayonet coupling circulars, miniature metal shell circulars, PC board header connectors and sensor and direct device connectors. ITT is also a systems supplier, providing value-added module and harness assemblies.

In addition to our CA Bayonet series, we also offer these connectivity solutions:

Environmentally Sealed

Harsh Environments



Cannon MIL-DTL-38999

High density contact arrangements, corrosion-resistant shells, rear release crimp snap-in contacts, operates under severe high temperature vibration testing.



Cannon Trident

Versatile range of electrical connectors based on a standard contact design. Options include; industrial grade, harsh environment and shielded circulars.

Cannon KPT / KPSE

Environmentally sealed miniature circular connectors available in two versions: KPT (solder contact) and KPSE (high performance crimp contact). Intermateable and intermountable with all MIL-C-26482 connectors and is available with many materials, finishes and configurations.

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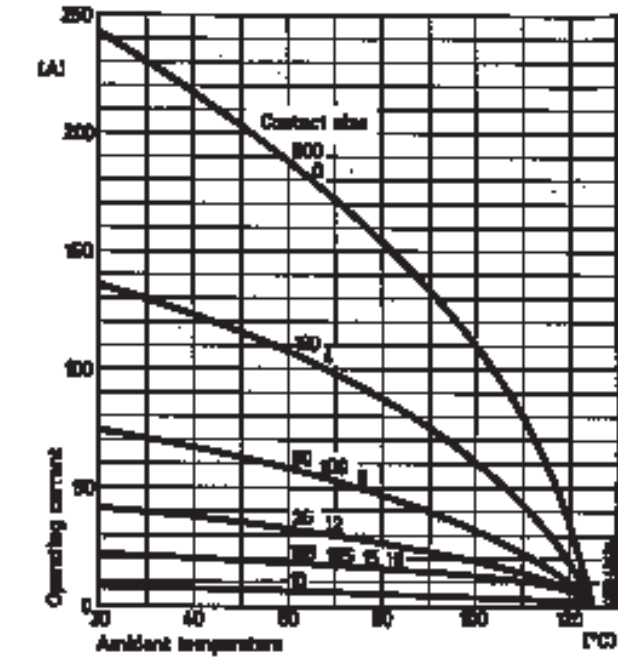
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Electrical Data

Contact rating at 68 °F (+20 °C)

Contact size	max. current A
10	8
16S/15S	22
16/15	22
12/25	41
8/60/100	74
4/160	135
0/500	245

Current rating
depending on ambient temperature



Operating voltage and connector usage

Connectors in equipments must not be separated or mated under load when used per specifications.

As according to specification the connectors are suitable for an operating voltage of 50 V (see Product Safety Information). However, this is only valid, when the connectors are freely accessible during operation and consequently might be touchable. When the connectors will be operated with line voltage, please contact ITT Customer Service.

Contact resistance
(Millivolt test)

The contact resistance has to be tested according to VG95234 part 2, test no. 5.10.1 and VG 95210, part 37. The measuring points are indicated in the illustration.



Contact size		Max. contact resistance mΩ
metric	AWG	
10	–	12
15S/15	16S/16	6
25	12	3
60/100	8	1
160	4	0,5
500	0	0,2

Insulation resistance
Acc. to VG95319, part 2, test no. 5.12 and VG95210, part 32, test condition B
Standard insulator material > 1000 MΩ
FKM insulator material (upon request) > 5000 MΩ

Test voltage
Acc. to VG95319, part 2, test no. 5.13 and VG 95210, part 31
Test voltage for service rating:

Service rating	Test voltage V _{rms}
Instruments	1050
A	1600
B	4000
D	2500
E	3000

Air and creepage paths (min.)

Voltage class	Instr.	A	D	E
Air and creepage paths mm	0,7	1,1	2,8	4,8

Mechanical Features

Ambient temperature

Standard insulator material
–55°/125°C (– 67/257°F)

FKM insulator material*
–30°/200°C (– 22/392°F)

Safety provisions**

IP 67 acc. to DIN 40 050
(1 bar pressure after 12 hrs.)

Vibration test

200 m/s² at 10 to 2000 Hz

Mating cycles

500 min.

Separating force per contact.

The corresponding separating force has to be measured according to VG95319, part 2, test no. 5.7. using the required test gage.

Contact size metric	AWG	Separating force min. N	Gage
10	–	0,3	G 0,99
15S/15	16S/16	1,0	G 1,56
25	12	1,5	G 2,36
60/100	8	3,0	G 3,58
160	4	4,0	G 5,69
500	0	8,5	G 9,04

Gage

(see also VG 95234, Part 1)



Gage	Contact diameter d +0,01	L –1
G 0,99	0,99	7
G 1,56	1,56	9
G 2,36	2,36	12
G 3,58	3,58	13
G 5,69	5,69	13
G 9,04	9,04	13

Coupling torque

The allowable coupling torques have to be tested under full bundle conditions of the connectors to VG95319, part 2, test no. 5.8.2.

Shell size	Allowable coupling torque closing and opening Nm max.	Opening Nm min.
10SL	1,7	0,15
12S	2,5	0,23
14S	3,6	0,35
16S/16	5,5	0,46
18	8	0,58
20	9	0,7
22	11	0,8
24	14	0,8
28	17	0,92
32	19	1,03
36	23	1,03

Contact retention

The contact retention has to be tested according to VG95319, part 2, test no. 5.4. Test force direction = Mating direction.

Contact size	AWG	Test force N
10	–	30
15S/15	16S/16	35
25	12	55
60/100	8	80
160	4	90
500	0	95

Materials

Shell

Standard finish
Aluminum alloy
Olive drab chromate coating over cadmium plating

Alternative finish

Zinc cobalt (see page 9 – Modification)

Insulator

and grommets
Polychloroprene (Standard)
FKM (High temperature)*

Contacts

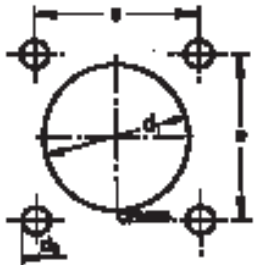
Standard finish
Copper alloy
Hard silver
Special finish
A176 nickel and hard gold plating

* upon request

** **Longitudinal sealing:** The connector is not sealed against fluids entering through the cable, as the sealing lips of the single wire sealing are pressing against the jacket of the individual cables.

Mounting Holes

Mounting holes for wall mounting receptacles style A, B1, B2, C1, C2, J1, J2, N1 and N2 acc. to VG95234, or CA 3100E/F/R-B and CA 3102 E-B.



Shell size	ø d1H12 Style A CA 3102E-B	Style B1, B2 C1, C2, J1, J2 N1, N2 CA 3100E, F, R-B TBF-B/-05	ø d2H13 Style A, B2, C2, J2, N2 CA-B Mod-05	Style B1, C1, J1, N1 CA 3100E, F, R-B	e ±0,15	screws to be used A, B2, C2, J2, N2 CA-B-Mod. 05	B1, C1, J1, N CA 3100E, F
10SL	16,4	18,5	3,4	4,5	18,2	M3...DIN 85	M4...DIN 84
12S	16,4	21,7	3,4	4,5	20,6	M3...DIN 85	M4...DIN 84
14S	19,7	24,9	3,4	4,5	23,0	M3...DIN 85	M4...DIN 84
16S	22,9	27,7	3,4	4,5	24,6	M3...DIN 85	M4...DIN 84
16	22,9	27,7	3,4	4,5	24,6	M3...DIN 85	M4...DIN 84
18	26,1	31,1	3,4	4,5	27,0	M3...DIN 85	M4...DIN 84
20	29,5	34,5	3,4	4,5	29,4	M3...DIN 85	M4...DIN 84
22	32,7	37,8	3,4	4,5	31,8	M3...DIN 85	M4...DIN 84
24	36,0	41,3	3,9	4,5	34,9	M3,5...DIN 85	M4...DIN 84
28	42,0	47,1	3,9	5,5	39,7	M3,5...DIN 85	M5...DIN 84
32	48,3	53,8	4,5	5,5	44,5	M4...DIN 85	M5...DIN 84
36	54,6	60,0	4,5	5,5	49,2	M4...DIN 85	M5...DIN 84

* When used with safety elements the max. outer diameter must not exceed the outer diameter of the screw head.

Harnessing

VG95234 connectors are designed for single wire harnessing. Full sealing will be guaranteed only by using wires in accordance with MIL-W-5086, LN 9251 (for AWG) and TL 6145-009 and TL 6145-011 (for metric wires). All other wires have to conform to wire and insulation diameters with the data given in the following table:

Contact size AWG	metric mm	Crimp- and solder contacts AWG	metric mm ²	Insulation Ø AWG	metric mm
–	10	–	0,75-1,0	–	1,45-2,5
16S/15S	16/15	16	0,75-1,5	1,6-2,8	1,60-2,8
12	25	12	2,5	2,9-3,5	2,9-3,5
–	60	–	6,0	–	3,5-4,9
8	100	8	10,0	4,2-5,8	5,5-6,5
4	160	4	16,0	6,2-9,0	7,1-9,0
0	500	0	50,0	10,5-13,0	10,5-13,0

Wire Stripping

Either mechanical or hot stripping can be used. Prevent conductor or insulator damage. For solder contacts, conductors have to be pretinned.

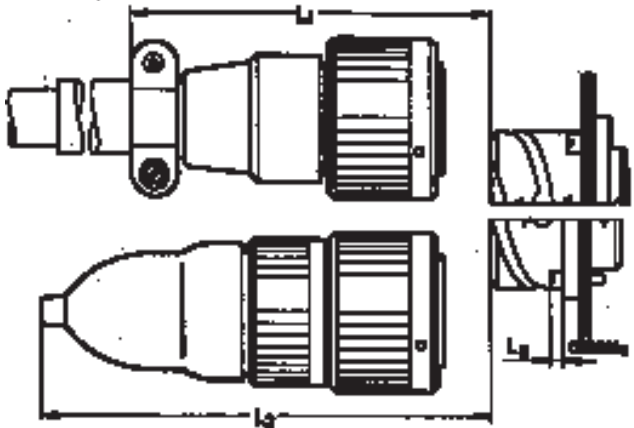
Note: Do not twist conductors used with crimp contacts. Do not touch uninsulated conductors before crimping. Twisting of conductors and grease or lubricants on the wires cause poor crimp quality.

Contact size AWG	metric	Stripping length mm
–	10	4,0 + 0,4
16S/15S	16/15	6,0 + 0,5
12	25	6,0 + 0,5
8	60/100	11,0 + 0,8 – 0,4
4	160	11,0 + 0,8 – 0,4
0	500	13,0 + 0,8 – 0,4

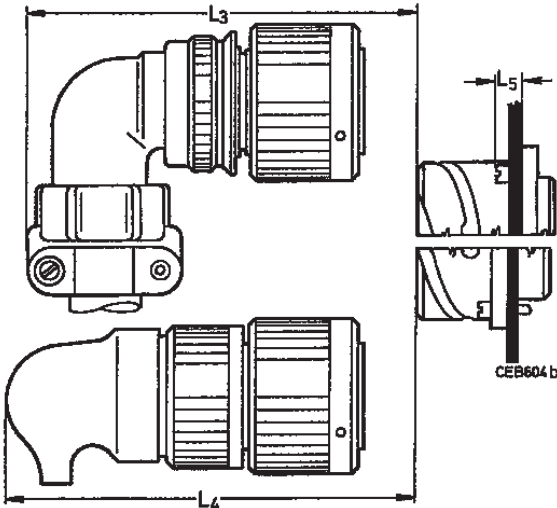
Separating and Mounting Dimensions

When using connectors according to VG 95234 the below mentioned installation dimensions have to be met.

Connector style D
or
CA3106E-B and
CA3106F-B
CA3106F-B-13/-14/-15



Connector style G, M, R1
or
CA3106E-B-02/-03/-06
CA3106E-B-13/-14/-15 and
CA3106E-B-32
with shrink boot, straight,
acc. VG95343



Connector style E, E1 and K
or
CA3108E/F-B and
CA3108F-B-13/-14/-15

Connector style G, M, R1
or
CA3106E-B-02/-03/-06
CA3106E-B-32
with shrink boot 90°
acc. to VG 95343

Shell Size	L1 (D) min.	L2 (G/M) min.	L3 min.	L4		L5 max.	L6 max.
				(G/M) min.	R1 +10 mm		
10SL	70	70	70	65	75	8,0	3,5
12S	70	75	75	70	80	8,0	3,5
14S	70	75	75	70	80	8,0	3,5
16S	70	90	80	80	90	8,0	3,5
16	80	100	90	90	100	6,5	3,5
18	90	100	90	90	100	8,0	3,5
20	90	100	95	100	110	8,0	3,5
22	90	100	95	100	110	8,0	3,5
24	110	120	105	110	120	8,0	5,0
28	110	120	105	110	120	9,0	5,0
32	110	180	115	120	130	9,0	6,0
36	110	190	120	130	140	9,0	6,0

Cannon VG/CA-Bayonet

View on Mating face of Pin Insulator	No. of Contacts	Contact arrangement		Service rating	Insulator position						Position	Special polarization	Insulator weight (g) including contacts	
		Contact size VG	CA		N	V	W	X	Y	Z			pin	socket
	3	10SL-3 15S	10SL-3 16S	– A	0	–	–	–	–	–	–	–	6	9
	2	10SL-4 15S	10SL-4 16S	A	0	–	–	–	–	–	–	–	4	6
▲ 	2	–	12S-3 16S	A	0	100	70	145	215	290	–	–	4	6
	1	–	12S-4 16S	D	0	–	–	–	–	–	3	110	3	4,5
	4	–	12SA10 16S	Instr.	0	–	–	–	–	–	3 8	110 250	6	8
	3	–	14S-1 16S	A	0	–	–	–	–	–	–	–	6	9
	4	–	14S-2 16S	Instr.	0	–	–	120	240	–	–	–	7	11
	1	–	14S-4 16S	D	0	–	–	–	–	–	–	–	4	7
	5	–	14S-5 16S	Instr.	0	–	–	110	–	–	–	–	9	13
	6	14S-6 15S	14S-6 16S	Instr.	0	–	–	–	–	–	–	–	11	15
▲ 	3	–	14S-7 16S	A	0	–	90	180	270	–	–	–	6	9
	2	–	14S-9 16S	Instr.	0	–	70	145	215	290	–	–	5	18
	7	–	14SA7 16S	Instr.	0	–	–	–	–	–	–	–	10	15
▲ 	7	16S-1 15S	16S-1 16S	A	0	–	80	–	–	280	–	–	14	19
	2	16S-4 15S	16S-4 16S	D	0	–	35	110	250	325	–	–	7	10
▲ 	3	–	16S-5 16S	A	0	–	70	145	215	290	–	–	8	12
	5	–	16S-8 16S	A	0	–	–	170	265	–	–	–	10	15

▲ Attention: for all alternate positions of these contact arrangements a tendency to overmate can be stated.
It is within the customer's responsibility to use these insert positions.



Dimensions shown in mm
Specifications and dimensions subject to change

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Cannon VG/CA-Bayonet

View on Mating face of Pin Insulator	No. of Contacts	Contact arrangement		Service rating	Insulator position						Position	Special polarization	Insulator weight (g) including contacts	
		Contact size VG	CA		N	V	W	X	Y	Z			pin	socket
	3 2 1	16-7 15 100	16-7 16 8	A	0	–	80	110	250	280	–	–	16	25
	4 2 2	–	16-9 12 16	A	0	–	35	110	250	325	–	–	13	20
▲ 	3	16-10 25	16-10 12	A	0	–	90	180	270	–	–	–	17	24
	2	–	16-11 12	A	0	–	35	110	250	325	–	–	11	17
	1	16-12 160	16-12 4	A	0	–	–	–	–	–	–	–	24	28
	2	16A11 25 (socket) 25A (pin)	16A11 12	A	0	–	35	110	250	325	–	–	11	17
▲ 	10	18-1 15	18-1 16	A (B, C, F, G) Instr. (all others)	0	–	70	145	–	290	–	–	24	37
	2	–	18-3 12	D	0	–	35	110	250	325	–	–	13	22
	4	–	18-4 16	D	0	–	35	110	250	325	–	–	19	30
	3 2 1	–	18-5 12 16	D	0	–	80	110	250	280	–	–	15	25
	1	–	18-6 4	D	0	–	–	–	–	–	–	–	24	32
	1	–	18-7 8	D	0	–	–	–	–	–	–	–	16	25
	8 1 7	–	18-8 12 16	A	0	–	70	–	–	290	–	–	18	30
	7 2 5	–	18-9 12 16	Instr.	0	–	80	110	250	280	–	–	18	30
	4	–	18-10 12	A	0	–	–	120	240	–	–	–	13	22
	5	18-11 25	18-11 12	A	0	–	–	170	265	–	–	–	31	40

▲ Attention: for all alternate positions of these contact arrangements a tendency to overmate can be stated.
It is within the customer's responsibility to use these insert positions.

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