

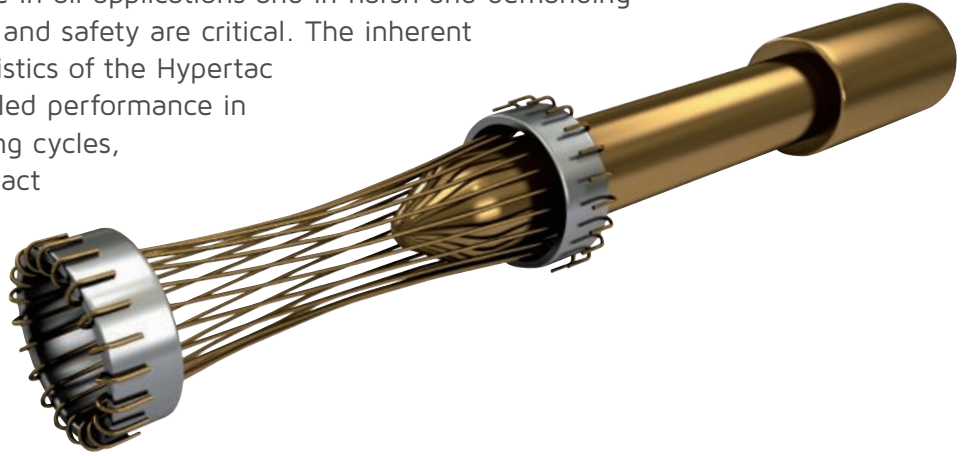
B Series

Modular Rectangular Connectors



Hypertac® Hyperboloid Technology

Smiths Interconnect offers an extensive range of superior contact technologies suitable for standard and custom solutions. Hypertac® (HYPERboloid conTACT) is the original superior performing hyperboloid contact technology designed for use in all applications and in harsh and demanding environments where high reliability and safety are critical. The inherent electrical and mechanical characteristics of the Hypertac hyperboloid contact ensures unrivalled performance in terms of reliability, number of mating cycles, low contact force and minimal contact resistance. The shape of the contact sleeve is formed by hyperbolically arranged contact wires, which align themselves elastically as contact lines around the pin, providing a number of linear contact paths.



Features

Benefits

Low insertion/extraction forces

The angle of the socket wires allows tight control of the pin insertion and extraction forces. The spring wires are smoothly deflected to make line contact with the pin.

High density interconnect systems

Significant reductions in size and weight of sub-system designs. No additional hardware is required to overcome mating and un-mating forces.

Long contact life

The smooth and light wiping action minimizes wear on the contact surfaces. Contacts perform up to 100,000 insertion/extraction cycles with minimal degradation in performance.

Low cost of ownership

The Hypertac contact technology will surpass most product requirements, thus eliminating the burden and cost of having to replace the connector or the entire subsystem.

Lower contact resistance

The design provides a far greater contact area and the wiping action of the wires insures a clean and polished contact surface. Our contact technology has about half the resistance of conventional contact designs.

Low power consumption

The lower contact resistance of our technology results in a lower voltage drop across the connector reducing the power consumption and heat generation within the system.

Higher current ratings

The design parameters of the contact (e.g., the number, diameter and angle of the wires) may be modified for any requirement. The number of wires can be increased so the contact area is distributed over a larger surface. Thus, the high current carried by each wire because of its intimate line contact, can be multiplied many times.

Maximum contact performance

The lower contact resistance of the Hypertac contact reduces heat build-up; therefore Hypertac contacts are able to handle far greater current in smaller contact assemblies without the detrimental effects of high temperature.

Immunity to shock & vibration

The low mass and resultant low inertia of the wires enable them to follow the most abrupt or extreme excursions of the pin without loss of contact. The contact area extends 360° around the pin and is uniform over its entire length. The 3 dimensional symmetry of the Hypertac contact design guarantees electrical continuity in all circumstances.

Reliability under harsh environments

Harsh environmental conditions require connectors that will sustain their electrical integrity even under the most demanding conditions such as shock and vibration. The Hypertac contact provides unmatched stability in demanding environments when failure is not an option.

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B Series



We provide connectivity solutions for transmitting power, data and signals in railway technology. The Smiths Interconnect modular B Series connectors allow you to combine various contact types, such as signal, power, coaxial and high speed contacts, in a single contact frame our housing.

Electrical contacts are equipped with our proven HYPERTAC® hyperboloid technology. B Series is the expert choice for applications that require all-in-one space-saving modular connectors that reach high voltage and current levels, and high mating cycle contacts that guarantee long life performance under the most demanding mechanical and environmental conditions.

The B Series features with an adaptable cable clamp, clip and cloc contact retaining system, bi-level contact modules (BC, BGD), a centered jackscrew extractor and guiding and coding functions to ensure reliable mating up to 500 cycles.

B-Series connectors are in compliance with NF F French railway standards.

Plastic hooded connectors with threaded jackscrew

Features & Benefits

Superior Performance

- Hypertac® hyperboloid contact technology ensures immunity to shock and vibration and minimal contact resistance
- Modularity: mixed signal, power, coaxial and high speed contacts
- Up to 100 signal Ø 1.50mm contacts in a single frame or housing
- Interchangeable contact retaining system

Advanced Design

- Bi-level contact modules (BC, BGD)
- Two half part plastic hood
- Adaptable cable clamps
- Design adapted to customer footprint and electrical voltage
- Compliance with NF F61-030,
- NF F16-101, NF F16-102

How To Order



1 Series	B [fixed]
2 Model	C E F G
3 Shell feature	- Standard D Only for F & G model (<i>fixed locking devices</i>)
4 Arrangements <i>(Consult the Smiths Interconnect)</i>	
5 Part - Polarity	0 1 Plug without contact* 0 2 Receptacle without contact* 0 3 Plug without contact** 0 4 Receptacle without contact**
6 Termination styles	0 0 Delivered without contact
7 Pitch Number <i>(Only for F & G model)</i>	1 6 2 0 2 2
8 Cable clamp	<p>For BC & BE</p> <p>0 Control switch (<i>without cable clamp</i>)</p> <p>1 1 cable clamp: A, max 50 mm, min 16 mm 2 1 cable clamp: B, 2 holes Ø 20</p> <p>3 2 cable clamps: A, max 50 mm, min 16 mm 4 2 cable clamps: B, 2 holes Ø 20</p> <p>5 1 cable clamp: A, max 50 mm, min 16 mm - 1 cable clamp: B, 2 holes Ø 20</p> <p>7 Plug without hood, 1 cable clamp B, Power: 2 holes Ø 20</p> <p>For BF & BG</p> <p>0 Without cable clamp 1 1 cable clamp 2 2 cable clamps</p>

* For BE & BF
** For BC & BG

Technical Characteristics

Materials & Platings

Shell	Stainless and Soft Steel (Ni plated)
Housing	Plug: thermoplastic
Insulator	Thermoplastic
Pin & Socket body	Brass, Au/Ni
Socket wires	Copper alloy, Au/Ni

Environmental

Temperature range	-40 °C to +100 °C
Fire classification	Exigence 3 following NF F 16-102
Salt spray test	96 hours (5% Na Cl)
Acid withstanding	Following NF F 61030 § 11.4.4

Electrical

BC & BG

Contact Ø	1.50	2.00	3.00
Creepage distance	8 mm	6.80 mm	17 mm
Clearance distance	3.7 mm	5 mm	5.60 mm
Working current	8 A	16 A	25 A
Insulation resistance	≥ 5.10 ³ MΩ		
Contact resistance	≤ 2.50 mΩ	≤ 1.20 mΩ	≤ 0.70 mΩ
Dielectric withstanding voltage	3000 Vrms	4000 Vrms	3900 Vrms
Voltage rating	<500 V		
Contact holding back in the module	70 N	90 N	110 N
Max male contact mass	1.10 g	3.10 g	6.70 g
Max female contact mass	0.70 g	2.50 g	5.00 g
IF/SF* (max value)	0.45 N	1.80 N	3.00 N

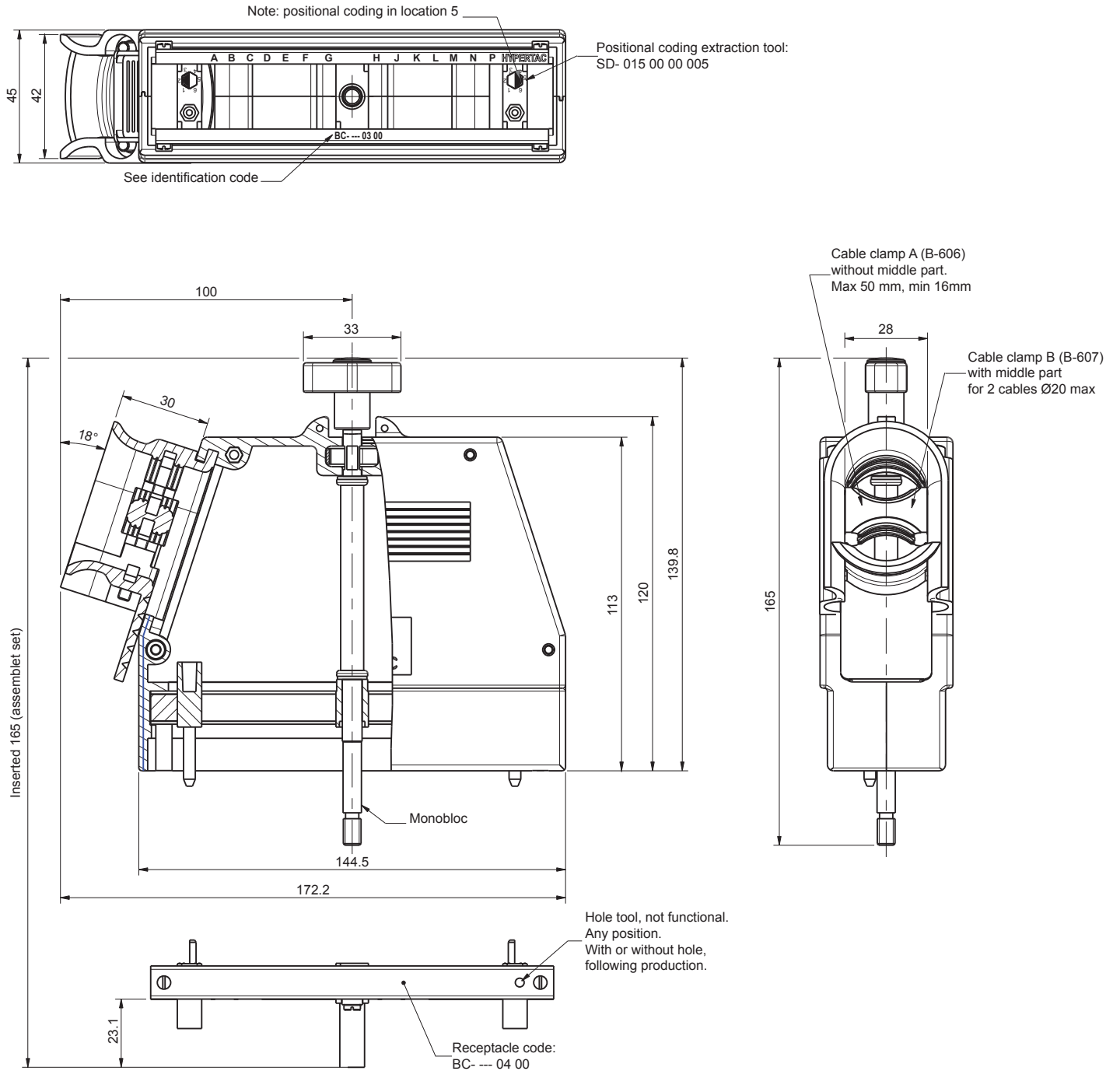
BE & BF

Contact Ø	1.50	2.50	3.50
Creepage distance	1.85 mm	2.25 mm	4.05 mm
Clearance distance	1.25 mm	3.40 mm	5.40 mm
Working current	8 A	16 A	25 A
Insulation resistance	≥ 5.10 ³ MΩ		
Contact resistance	≤ 2.50 mΩ	≤ 1.00 mΩ	≤ 0.80 mΩ
Dielectric withstanding voltage	1500 Vrms	2000 Vrms	3000 Vrms
Voltage rating	110 V	220 V	220 V
Contact holding back in the module	40 N	50 N	70 N
Max male contact mass	1.10 g	2.90 g	4.90 g
Max female contact mass	0.70 g	1.60 g	2.70 g
IF/SF* (max value)	0.45 N	1.80 N	3.00 N

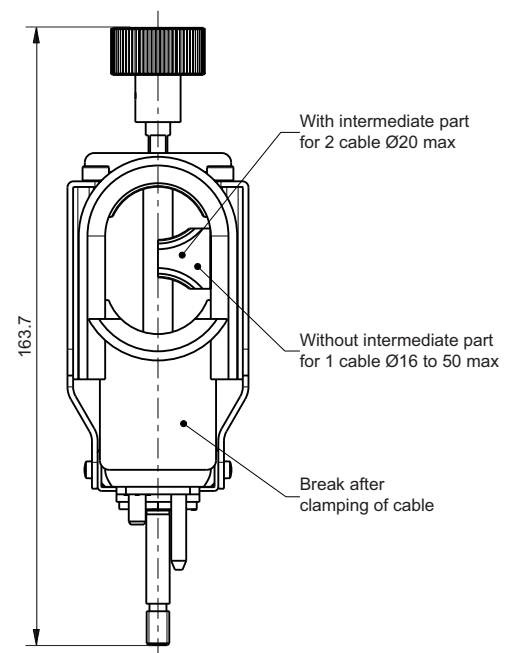
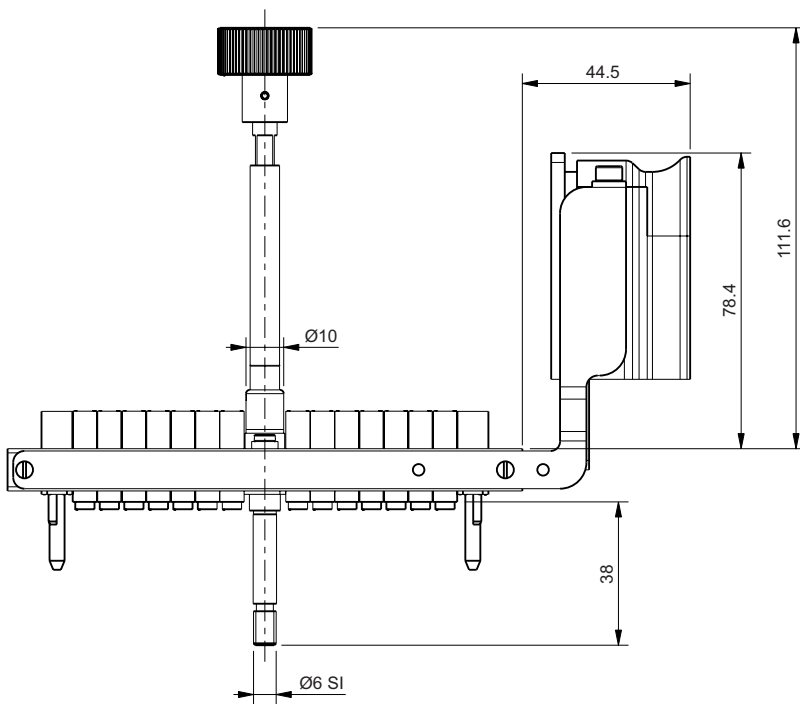
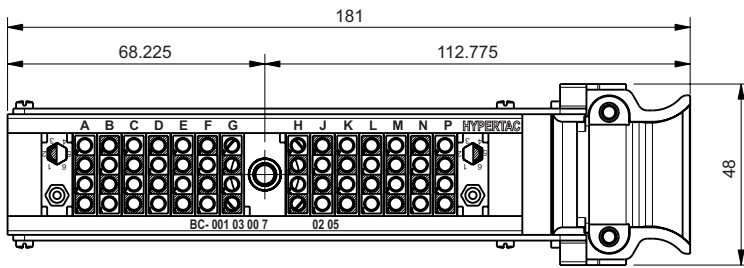
* IF/SF: insertion and separation force

BC - Connectors

BC - Plug & Receptacle Dimensions

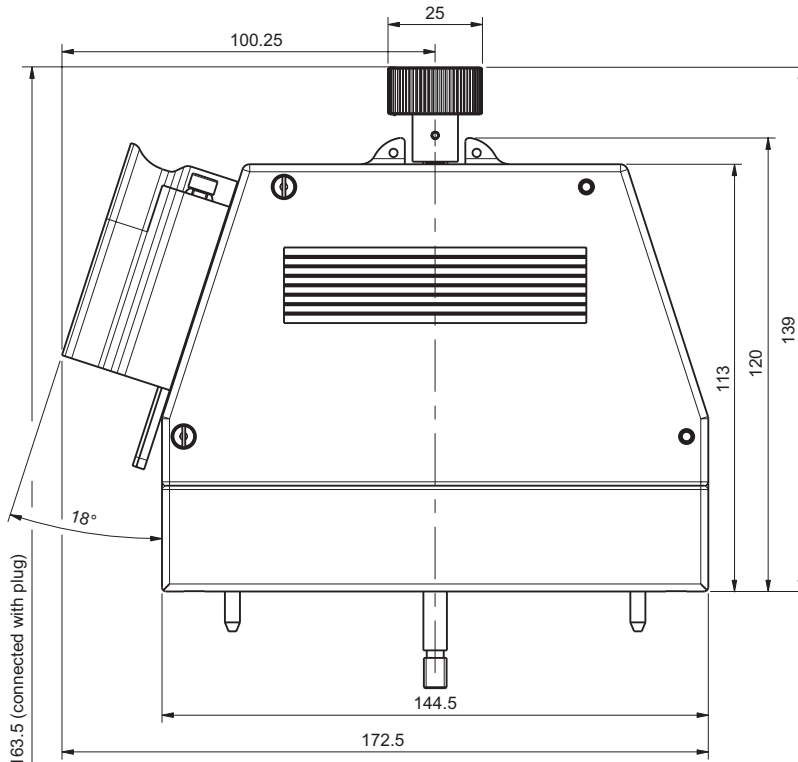
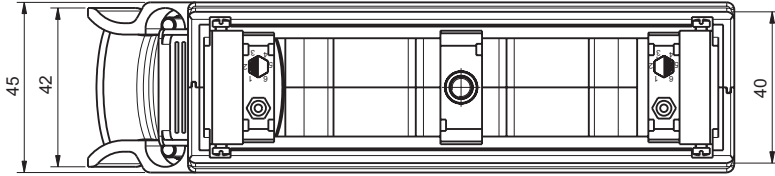


BC - Plug without hood dimensions



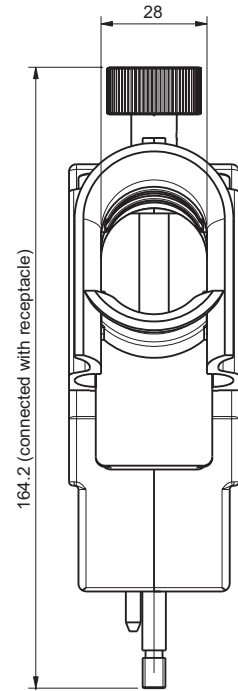
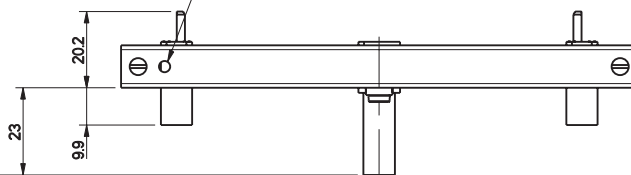
BE - Connectors

BE - Plug & Receptacle Dimensions

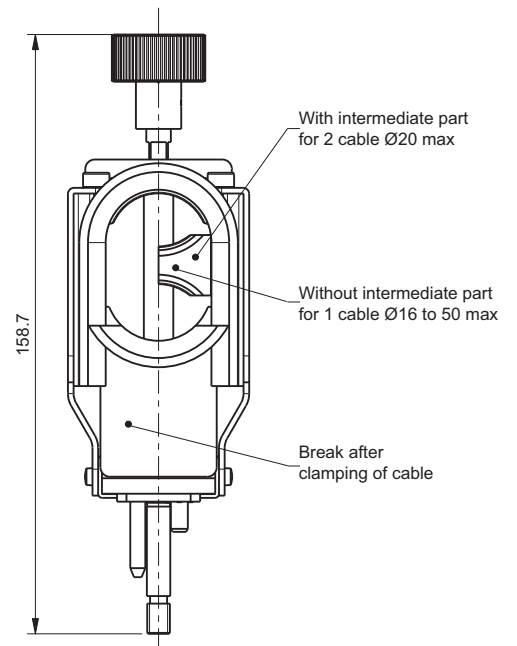
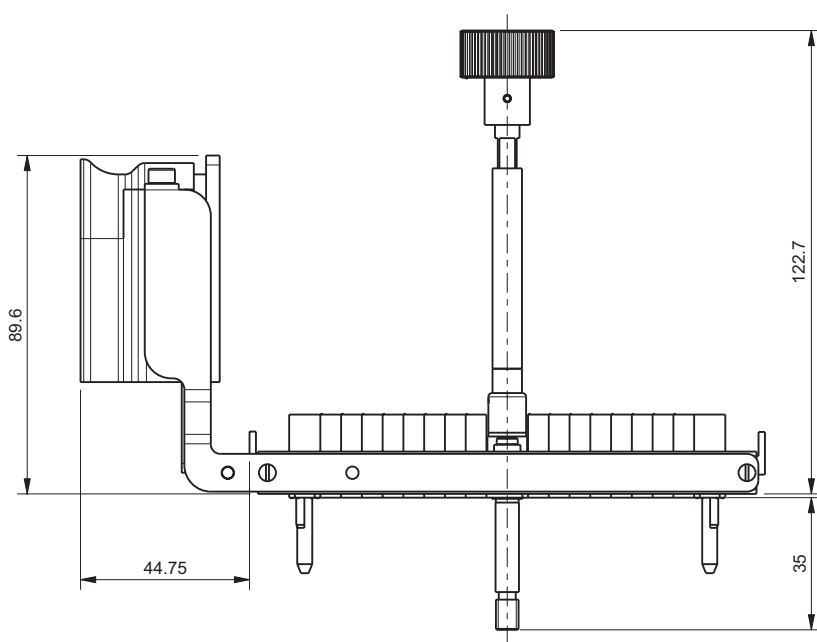
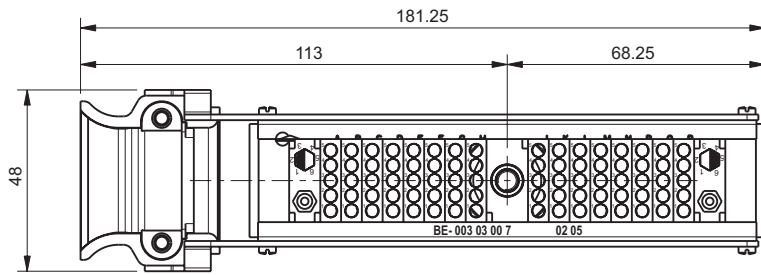


To be connected with plug BE- --- 03 00 -

Non-functional tooling hole.
Not important position.
With or without hole following manufacturing.

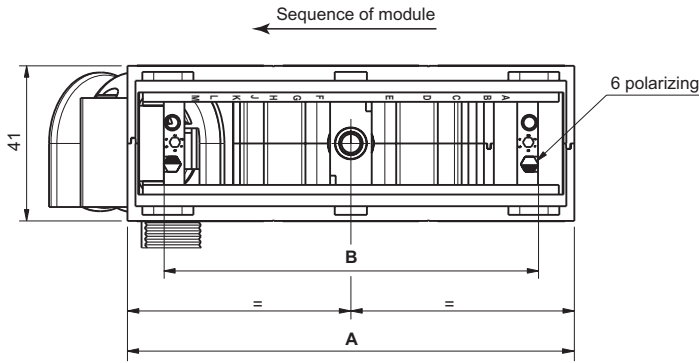


BE - Plug without hood dimensions

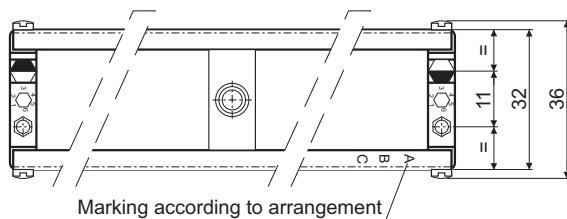
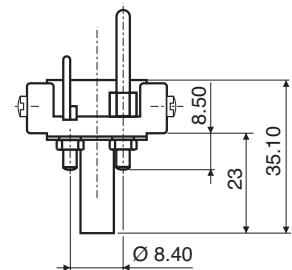
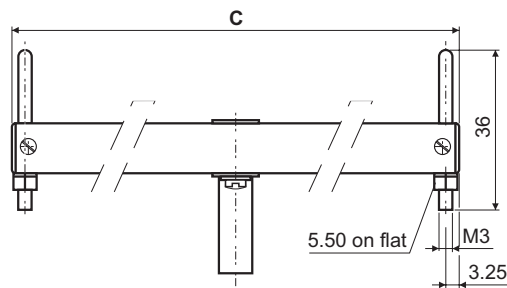
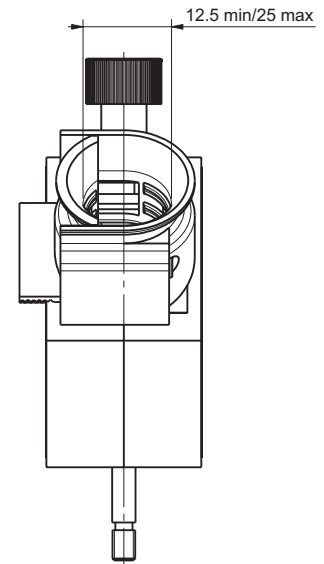
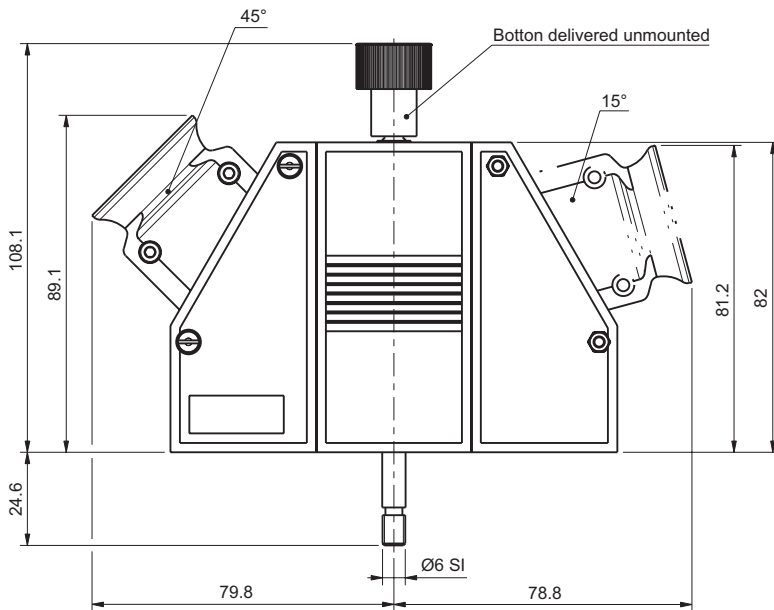


BF & BF(D) - Connectors

BF & BF(D) - Plug & Receptacle Dimensions

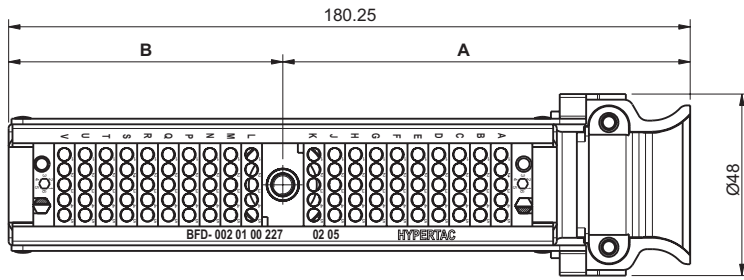


Pitch number	A	B	C
16	118.40	99.00	101.00
20	140.40	121.00	123.00
22	151.40	132.00	134.00

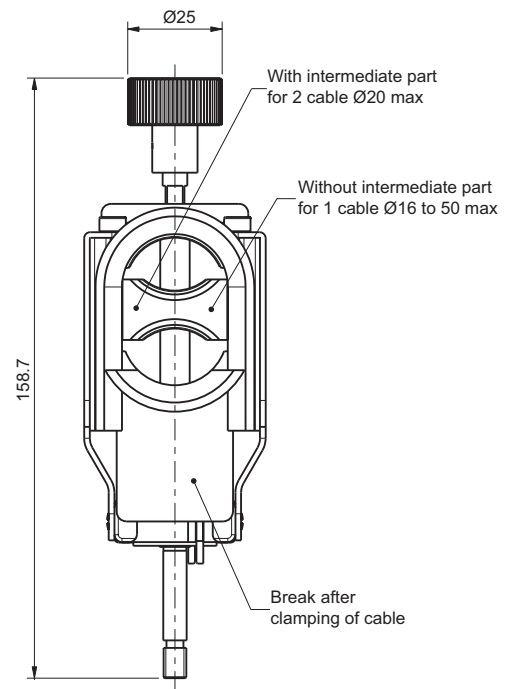
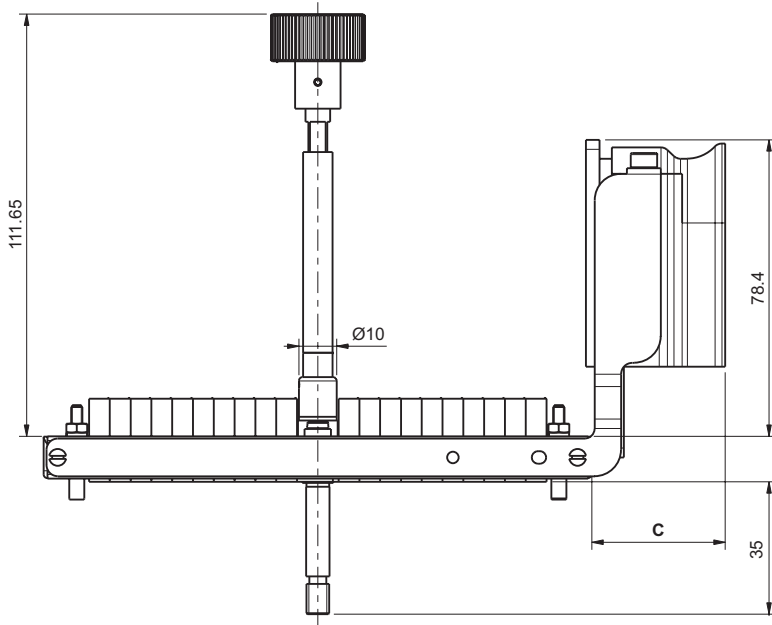


Dimensions are in mm

BF(D) - Plug Without Hood Dimensions

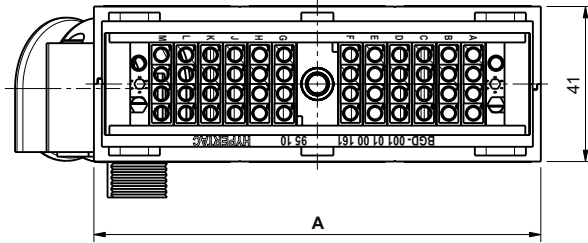


Pitch number	A	B	C
16	124.25	56.00	68.25
22	107.75	72.50	35.25

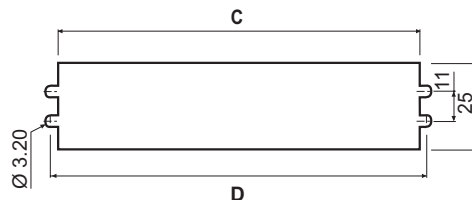
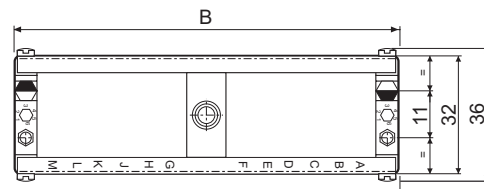
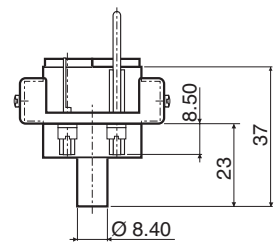
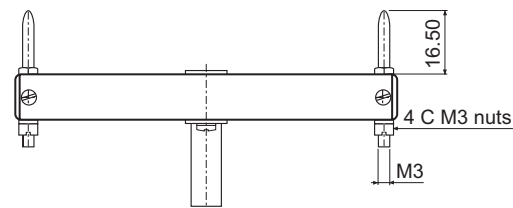
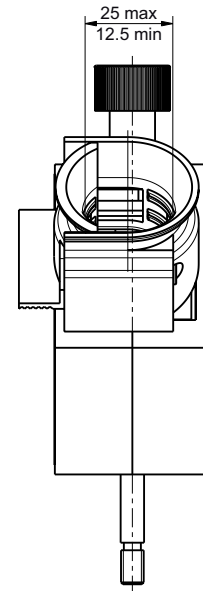
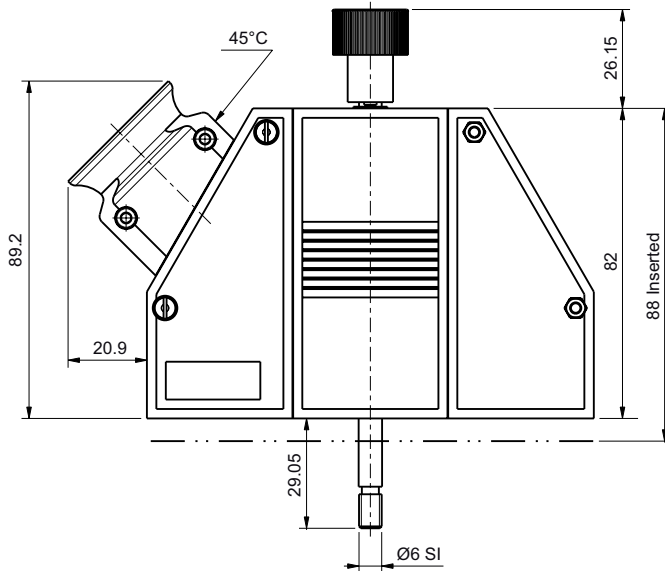


BG & BG(D) - Connectors

BG & BG(D) - Plug & Receptacle Dimensions



	Pitch number	
	16	20
A	118.40	140.40
B	101.00	123.00
C	89.50	102.50 min 111.50 max
D	94.50	116.50



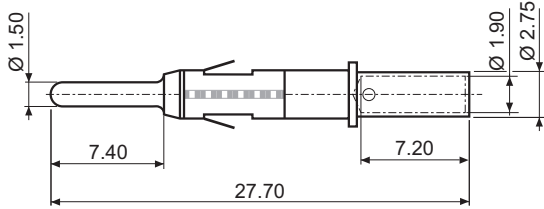
Dimensions are in mm

BC & BG(D) - Contacts

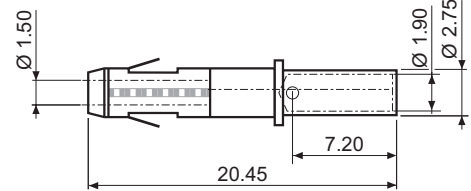
Male

Female

Contacts \varnothing 1.50 - (AWG 24-22-20-18-16-14)

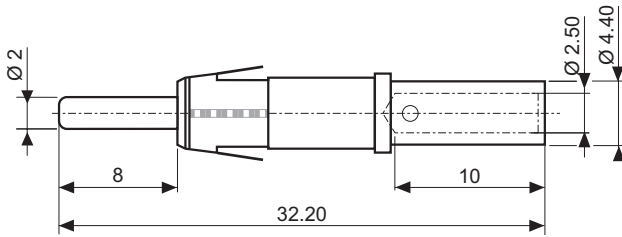


Ref: 015 090 1- 20R OG

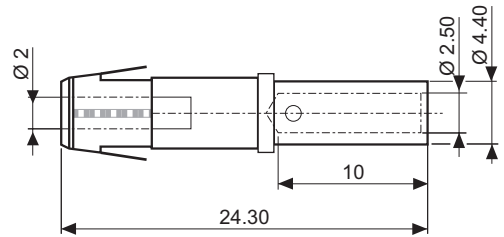


Ref: 015 090 2- 20R G0

Contacts \varnothing 2.00 - (AWG 17-16-15-14-13)

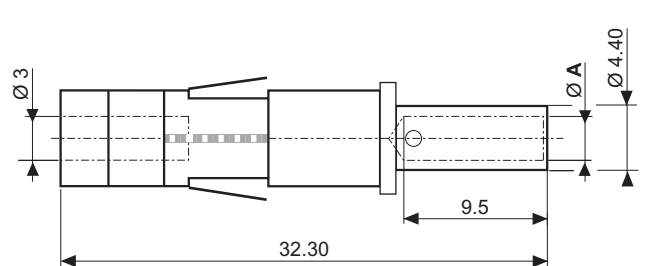
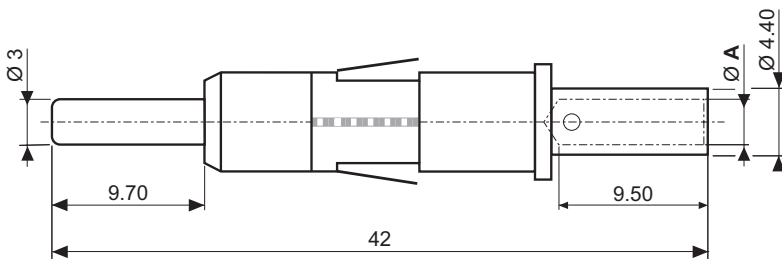


Ref: 020 073 1- 20R OG



Ref: 020 042 2- 20R G1

Contacts \varnothing 3.00*



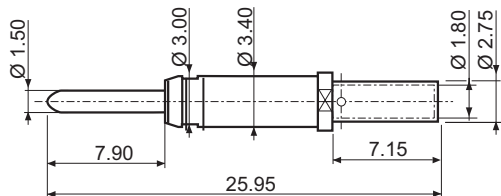
Contacts \varnothing 3.00		
Pitch number	\varnothing A	AWG*
030 034 1- 20R OG 030 017 2- 20R G1	2.90	13-11-10
030 039 1- 20R OG 030 023 2- 20R G1	3.40	11-9

BE & BF(D) - Contacts

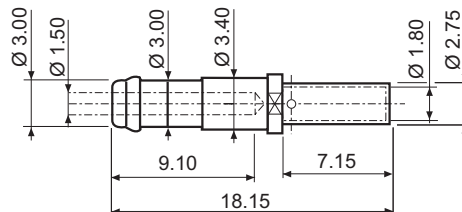
Male

Female

Contacts \varnothing 1.50 - (AWG 22-20-18-16-14)

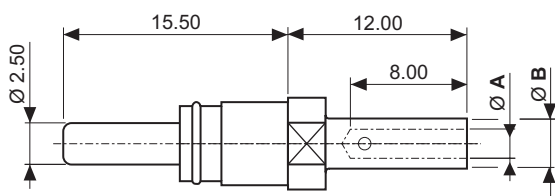


Ref: 015 076 1- 20-OG

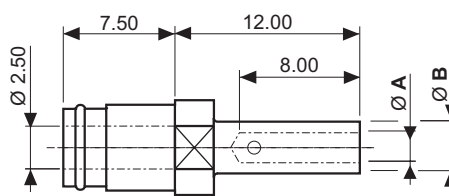


Ref: 015 068 2- 20- G1

Contacts \varnothing 2.50*

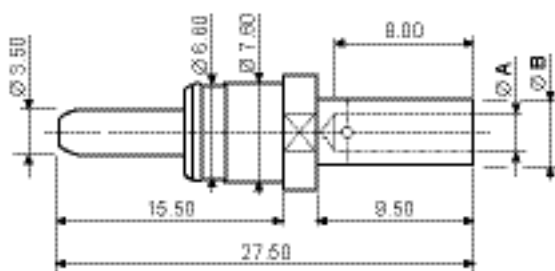


Ref: 025 018 1- 22- OG
Ref: 025 020 1-23- OG

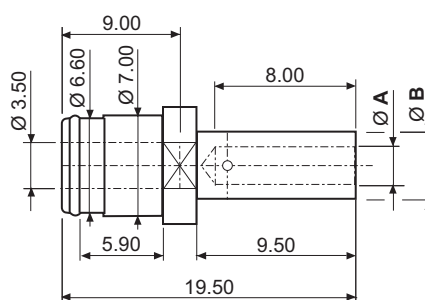


Ref: 025 017 2- 22- G1
Ref: 025 020 2- 23- G1

Contacts \varnothing 3.50*



Ref: 035 011 1- 24- OG
Ref: 035 012 1- 25- OG
Ref: 035 013 1- 26- OG



Ref: 035 011 2- 24- G1
Ref: 035 012 2- 25- G1
Ref: 035 013 2- 26- G1

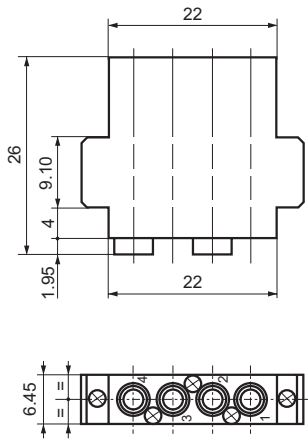
Contacts \varnothing 2.50			
Pitch number	\varnothing A	\varnothing B	AWG*
025 018 1- 22- OG 025 017 2- 22- G1	1.95	3.10	16-14
025 020 1- 23- OG 025 020 2- 23- G1	1.50	3.10	22-20-18-16

Contacts \varnothing 3.50			
Pitch number	\varnothing A	\varnothing B	AWG*
035 011 1- 24- OG 035 011 2- 24- G1	2.10	4.10	14-13
035 012 1- 25- OG 035 012 2- 25- G1	1.95	3.10	16-14
035 013 1- 26- OG 035 013 2- 26- G1	1.50	3.10	22-18

Dimensions are in mm

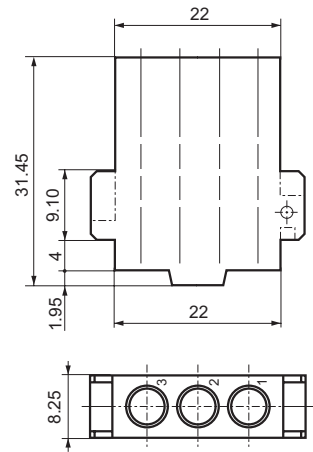
BC & BF(D) - Modules

Modules 4 x Ø1.50



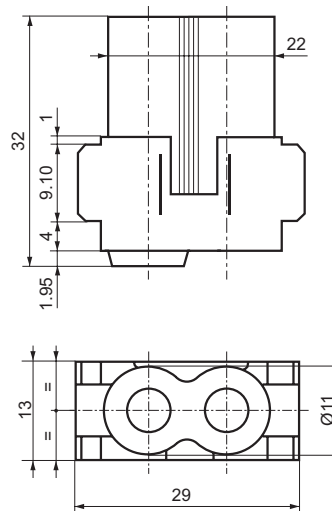
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 B-- 415 00 00 02

Modules 3 x Ø2.00



Ref: B-- 320 00 00 01
 B-- 320 00 00 02

Modules 2 x Ø3.00

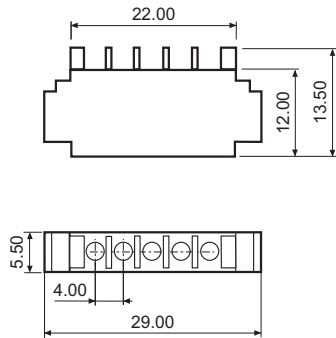


Ref: B-- 230 00 00 01
 B-- 230 00 00 02

BE & BF(D) - Modules

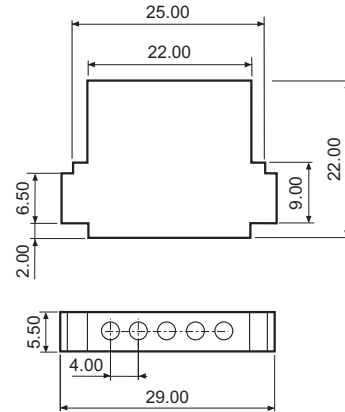
Modules 5 x Ø1.50

L/RH



Ref: L-- 515 00 00 RHA

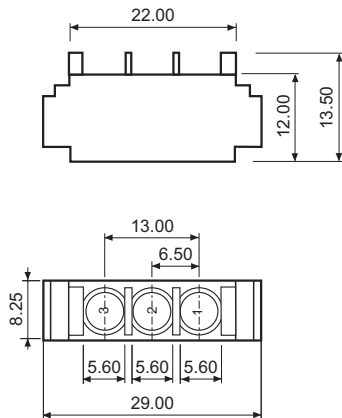
L/ZH



Ref: L -- 515 00 00 ZHA

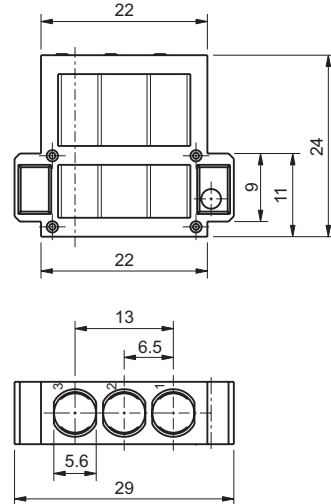
Modules 3 x Ø2.50

L/SH



Ref: L-- 325 00 00 SH

L/XH

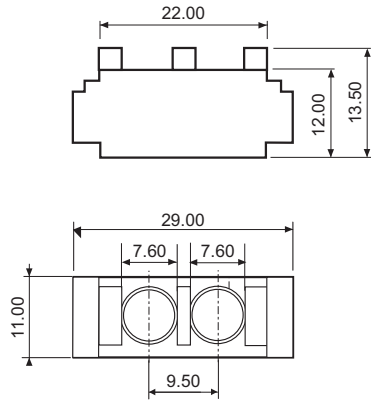


Ref: L-- 325 00 00 XH

BE & BF(D) - Modules

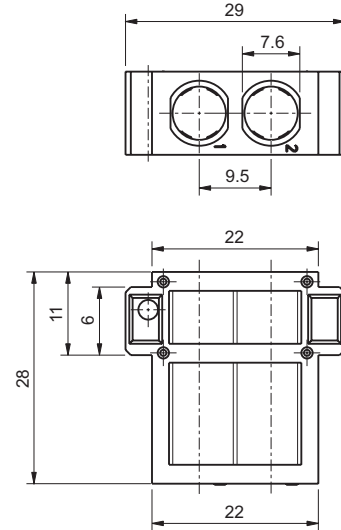
Modules 2 x Ø3.50

L/UH



Ref: L-- 235 00 00 UH

L/YH



Ref: L-- 235 00 00 YH

BC & BG(D) - Crimping Tools

Contact Part number	Crimp tool	AWG	Wire cross section	Positioner	Tool turret	Selector position
015 090 1- 20R OG 015 090 2- 20R GO	ASTRO TOOL MS3191/1	24	0.22	SS-015 00 00 002 HYPERTAC	Without	Without
		22	0.34			
		20	0.60			
		18	0.93			
		16	1.34			
		16	1.50			
	ASTRO TOOL TGV 101	24	0.22	Without	ASTRO TOOL TGV 201 red	2
		22	0.34			4
		20	0.60			4
DANIELS FT8	18	0.93	Without	DANIELS SH 462 red	5	
	16	1.34			6	
	16	1.50			6	
	14	1.91			7	
	24	0.22			2	
	22	0.34			4	
020 042 2- 20R G1 020 073 1- 20R OG	ASTRO TOOL TGV 515	17	1.00	Without	ASTRO TOOL TGV 501	2
		16	1.34			3
		15	1.50			3
		14	1.91			3
		14	2.00			3
	DANIELS M317	13	2.50	Without	DANIELS TP 909	4
		17	1.00			2
		16	1.34			3
		15	1.50			3
030 017 2- 20R G1 030 034 1- 20R OG	ASTRO TOOL TGV 515	13	2.50	Without	ASTRO TOOL TGV 502	Without
		11	4.00			
		10	4.31			
	DANIELS M317	13	2.50	Without	DANIELS TP 911	4
		11	4.00			5
		10	4.31			5
030 023 2- 20R G1 030 039 1- 20R OG	ASTRO TOOL TGV 515		4.00	Without	ASTRO TOOL TGV 502	4
			6.00			5
	DANIELS M317		4.00	Without	DANIELS TP 911	4
			6.00			5

Extraction tools

Contact Ø	Male	Female	Extracting tool
	Part number	Part number	
1.50	015 090 1- 20R OG	015 090 2- 20R G1	SD-015 00 00 005
2.00	020 073 1- 20R OG	020 042 2- 20R G1	SD-020 00 00 001
3.00	030 034 1- 20R OG	030 017 2- 20R G1	SD-030 00 00 002
3.00	030 039 1- 20R OG	030 023 2- 20R G1	SD-030 00 00 002

BE & BF(D) - Crimping Tools

Contact Part number	Crimp tool	AWG	Wire cross section	Positioner	Tool turret	Selector position
015 068 2- 20- G1 015 076 1- 20- OG	ASTRO TOOL TGV 101	24 22 20 18 16 14	0.22 0.34 0.60 0.93 1.34 1.91		ASTRO TOOL TGV 202 red	2 3 4 5 6 7
	DANIELS FT8	24 22 20 18 16 14	0.22 0.34 0.60 0.93 1.34 1.91		DANIELS SH 463 red	2 3 4 5 6 7
025 018 1- 22- OG 025 017 2- 22- G1	ASTRO TOOL TGV 101	16 15 15 14 14	1.34 1.50 1.82 1.91 2.00		ASTRO TOOL TGV 202 blue	6 6 7 7 7
	DANIELS FT8	16 15 15 14 14	1.34 1.50 1.82 1.91 2.00		DANIELS SH 463 blue	6 6 7 7 7
025 020 1- 23- OG 025 020 2- 23- G1	ASTRO TOOL TGV 101	22 20 18 18 16	0.34 0.60 0.93 1.00 1.34		ASTRO TOOL TGV 202 blue	5 6 6 6 6
	DANIELS FT8	22 20 18 18 16	0.34 0.60 0.93 1.00 1.34		DANIELS SH 463 blue	5 6 6 6 6
035 011 1- 24- OG 035 011 2- 24- G1	DANIELS M317	14 14 13	1.91 2.00 2.50		DANIELS TP 805	3 3 4
	ASTRO TOOL TGV 515	14 14 13	1.91 2.00 2.50	Without	ASTRO TOOL TGV 503	3 3 4
035 012 1- 25- OG 035 012 2- 25- G1	DANIELS M317	16 15 14 14	1.34 1.50 1.91 2.00		DANIELS TP 805	2 2 3 3
	ASTRO TOOL TGV 515	16 15 14 14	1.34 1.50 1.91 2.00	Without	ASTRO TOOL TGV 503	2 2 3 3
035 013 1- 26- OG 035 013 2- 26- G1	DANIELS M317	22 20 18 18	0.38 0.60 0.93 1.00		DANIELS TP 805	1 1 2 2
	ASTRO TOOL TGV 515	22 20 18 18	0.38 0.60 0.93 1.00	Without	ASTRO TOOL TGV 503	1 1 2 2

Extraction tools

Contact Ø	Male Part number	Female Part number	Insertion tool	Extracting tool
1.50	015 076 1- 20- OG	015 068 2- 20- G1	S_051 S_059 ⁽¹⁾ SM-0150000002 ⁽²⁾ SM-0150000003 ⁽³⁾ SME-0150000000 ⁽⁴⁾	S__051 S__072 S__083
2.50	025 018 1- 22- OG 025 020 1- 23- OG	025 017 2- 22- G1 025 020 2- 23- G1	SE-0250000001	S__078 S__083
3.50	035 011 1- 24- OG	035 011 2- 24- G1	SE-0350000001	S__083 ⁽⁵⁾

- (1) straight tool
(2) unwedge tool
(3) bent tool
(4) straight, unwedge and bent tools kit
(5) tool for Ø 1.50, 2.50 and 3.50 contacts

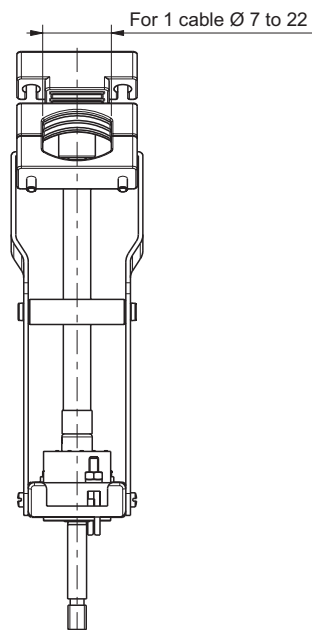
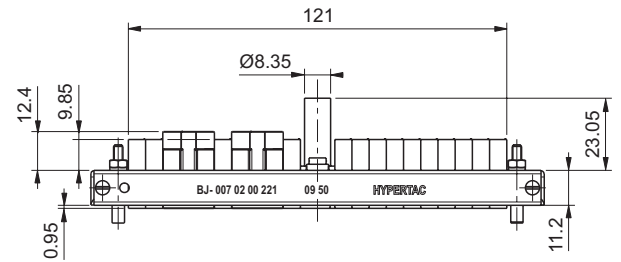
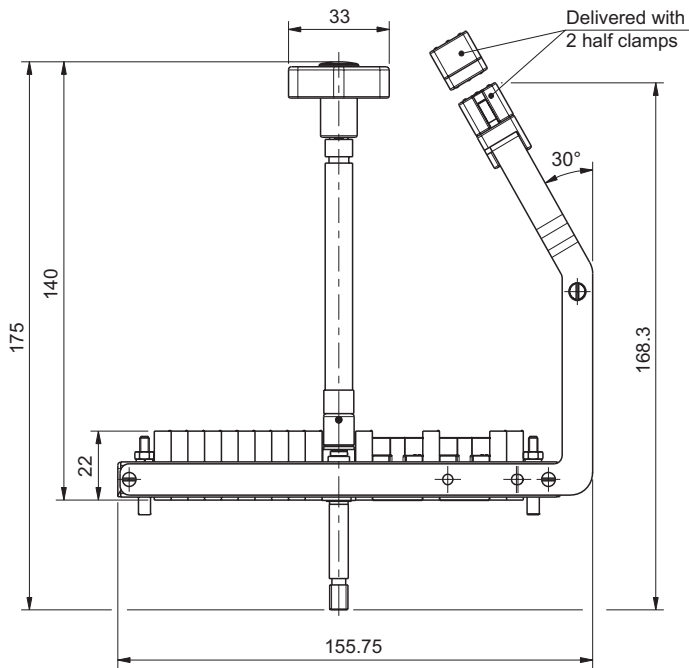
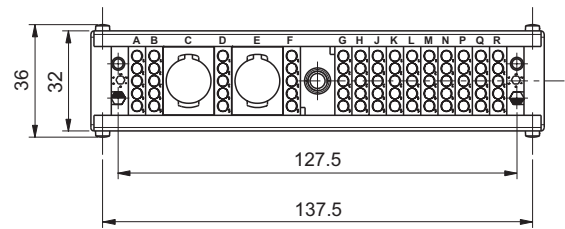
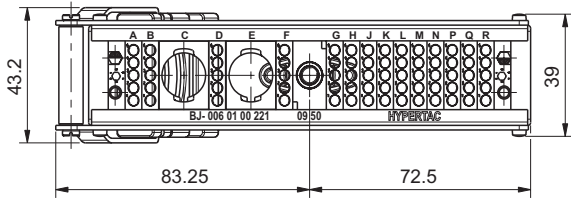
Specific Arrangement

with high speed quadrax contacts

Mounting example with B/HD

Male

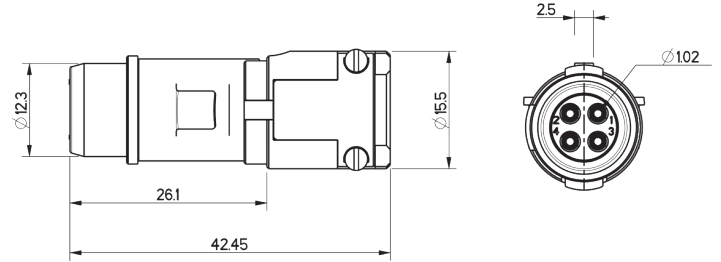
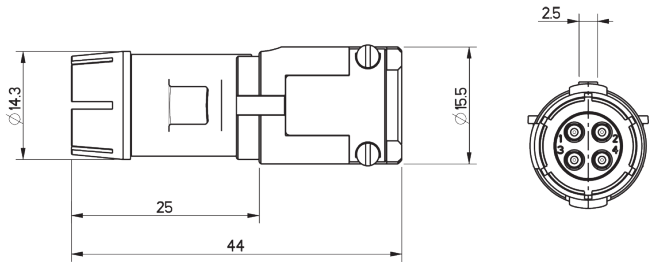
Female



High Speed Quadrax Contacts

Plug

Receptacle

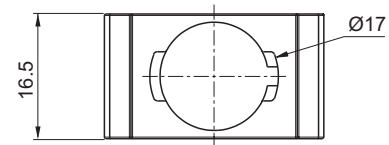
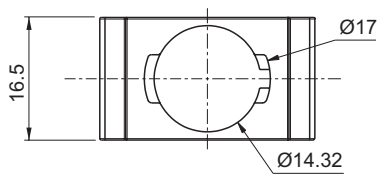
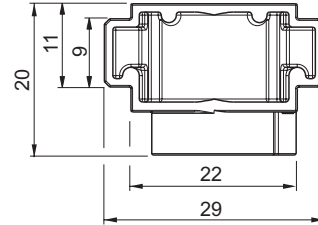
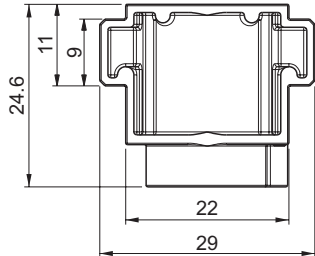


Male	Female
Ref: 123 012 1- QAR 01	Ref: 123 012 2- QAR 01

Modules

Plug

Receptacle



Note: For other configurations, please contact Smiths Interconnect
Dimensions are in mm

Disclaimer 2023

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