METAL-SHELL MICRO CIRCULAR CONNECTORS

Rugged Connectors with Flexible Configurations

HIGH-SPEED CONNECTIVITY
- Gigabit Ethernet, USB 2.0, and IEEE 1394 compatible

DURABLE
- High-performance materials
- Individual fluorosilicone O-rings on all contacts
- IP67 sealing
- 2000 mating cycles

FLEXIBLE CONFIGURATIONS
- Three coupling styles: push-pull, bayonet, threaded
- Common internal design
- Signal only and hybrid signal/power versions available
- Lightweight materials save space and weight
- Pin and socket or spring probe contacts
- Band strap for termination of braided shielding

RELIABLE PERFORMANCE
- Shock and vibration resistant
- Excellent electrical performance

TE Connectivity (TE) offers a broad range of Metal-Shell Micro Circular connectors, all designed for rugged durability and space and weight savings in commercial aerospace applications and military vehicles, radios, and soldier-worn equipment.

Performance Characteristics

ELECTRICAL

- **Compatibility:** 1 Gb/s Ethernet, USB 2.0, IEEE 1394, Cat 5e
- **Contact Current-Carrying Capacity (1 pin):**
  Signal: 2 amps max.
  Power: 5 amps max.
- **Operating Voltage:** 200 VAC max.
- **Termination Resistance:** 30 mΩ max.

MECHANICAL AND ENVIRONMENTAL

- **Durability:** 2000 mating cycles
- **Operating Temperature:** -55°C to +150°C
- **Sealing:** IP67
- **Coupling Options:** Push-pull, bayonet, threaded
- **Shell Sizes/Positions:**
  M11 shell, 11 positions
  M15 shell, 14 positions
  M14 shell, 19 positions
  M22 shell, 30 positions
- **Wire Size:**
  7 and 19 Positions: 24 AWG (7 strands max.)
  14 and 30 Positions: 24 AWG (19 strands max.)
  Power Pin: 22 AWG (19 strands max.)
- **Salt Spray Resistance:** 120 hours

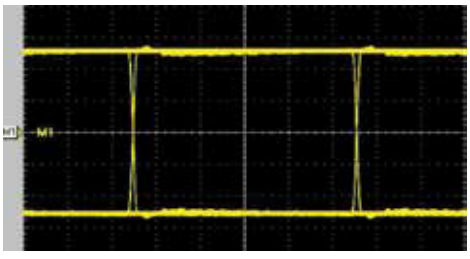
MATERIALS

- **Shell:** Brass, black tin-nickel plated
- **Insert:** LCP
- **Contacts:** Brass, plated gold over nickel
- **O-Ring:** Fluorosilicone

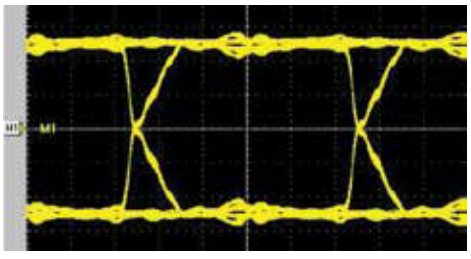
TECHNICAL DOCUMENTS

- **Product Specification:**
  108-78938 (for 7 and 19 positions)
  108-78967 (for 14 and 30 positions)
- **Qualification Test Report:**
  501-78493 (for 7 and 19 positions)
  501-78526 (for 14 and 30 positions)

Eye Pattern: Spring Probe Contact System Mask per USB 2.0 Specification, 480 Mb/s



Input



Output

Raytronics AG, Bösch 37, CH-6331 Hünenberg, Tel: +41 41 768 65 75, Fax: +41 41 768 65 80
E-Mail: info@raytronics.ch, Webseite: www.raytronics.ch, www.schrumpfschlauch.ch

Signal Connectors: Pin and Socket Contacts

Shell Size	No. of Pos.	Coupling	Keying	Part No.				
				Plug, Wire Solder Cups	Receptacle, Wire Solder Cup	Receptacle, PCB Solder Tail	Dust Cap Option*	
							Plugs	Receptacles
M11	7	Push-Pull	N	2174219-1	2174222-1	2174225-1	2822605-x	2201013-x
			A	2174219-2	2174222-2	2174225-2		
			B	2174219-3	2174222-3	2174225-3		
		Bayonet	N	2174220-1	2174223-1 2260439-1**	2174226-1	2229015-x	2201014-x
			A	2174220-2	2174223-2	2174226-2		
			B	2174220-3	2174223-3	2174226-3		
		Threaded	N	2174221-1	2174224-1	2174227-1	—	2201015-x
			A	2174221-2	2174224-2	2174227-2		
			B	2174221-3	2174224-3	2174227-3		
M14	19	Push-Pull	N	2174210-1	2174213-1	2174216-1	—	2201010-x
			A	2174210-2	2174213-2	2174216-2		
			B	2174210-3	2174213-3	2174216-3		
		Bayonet	N	2174211-1	2174214-1	2174217-1	2287626-x	2201011-x
			A	2174211-2	2174214-2	2174217-2		
			B	2174211-3	2174214-3	2174217-3		
		Threaded	N	2174212-1	2174215-1	2174218-1	—	2201012-x
			A	2174212-2	2174215-2	2174218-2		
			B	2174212-3	2174215-3	2174218-3		

* -x suffix is length of wire rope: -1 = 70 mm • -2 = 100 mm • -3 = 120 mm • -4 = 150 mm. Consult TE for availability of dust caps not listed here.
**In-Line Receptacle

Signal Connectors: Spring Probe Contacts

Shell Size	No. of Pos. (Signal)	Coupling	Keying	Part No.				
				Plug, Solder Cups	Receptacle, Solder Cups	Receptacle, PCB Solder Tail	Dust Cap Option*	
							Plugs	Receptacles
M11	7	Push-Pull	N	2174200-1	2174204-1	2174207-1	2822605-x	2201013-x
			A	2174200-2	2174204-2	2174207-2		
			B	2174200-3	2174204-3	2174207-3		
		Bayonet	N	2174201-1	2174205-1	2174208-1	2229015-x	2201014-x
			A	2174201-2	2174205-2	2174208-2		
			B	2174201-3	2174205-3	2174208-3		
		Threaded	N	2174202-1	2174206-1	2174209-1	—	2201015-x
			A	2174202-2	2174206-2	2174209-2		
			B	2174202-3	2174206-3	2174209-3		
M14	19	Push-Pull	N	2174191-1	2174194-1	2174197-1	—	2201010-x
			A	2174191-2	2174194-2	2174197-2		
			B	2174191-3	2174194-3	2174197-3		
		Bayonet	N	2174192-1	2174195-1	2174198-1	—	2201011-x
			A	2174192-2	2174195-2	2174198-2		
			B	2174192-3	2174195-3	2174198-3		
		Threaded	N	2174193-1	2174196-1	2174199-1	—	2201012-x
			A	2174193-2	2174196-2	2174199-2		
			B	2174193-3	2174196-3	2174199-3		

* -x suffix is length of wire rope: -1 = 70 mm • -2 = 100 mm • -3 = 120 mm • -4 = 150 mm. Consult TE for availability of dust caps not listed here.

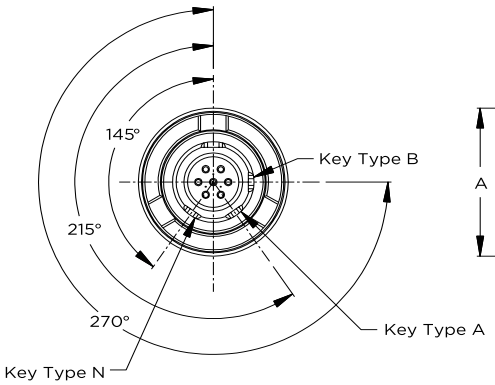
Hybrid Signal + Power Connectors: Pin and Socket Contacts

Shell Size	No. of Pos.	Coupling	Keying	Part No.		
				Plug, Solder Cups	Receptacle, In-Line	Receptacle, PCB Solder Tail
M15	14 (12 Signal, 2 Power)	Bayonet	N	2201481-1	4-287069-1	2201482-1
			A	2201481-2	—	2201482-2
M22	30 (28 Signal, 2 Power)	Threaded	N	2201712-1	2288255-1	2201713-1
			A	2201712-2	—	2201713-2

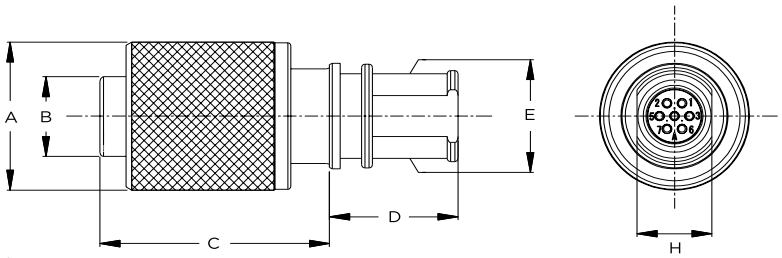
Metal-Shell Micro Circular Connectors

PLUG CONNECTORS

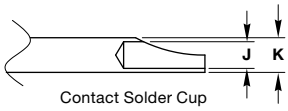
Keying



Plug Connectors, Solder Cup



Coupling	No. of Pos.	Power Contacts	A (Dia.)	B (Dia.)	C	D	E (Dia.)	H	Key Type
Push-Pull	7	—	14	6.96	21.45	12	8	7	N, A, B
	19	—	17	9.36	21.85	11.45	8.65	8	N, A, B
Bayonet	7	—	14	7.62	21.45	12	8	7	N, A, B
	19	—	17	10.16	21.75	11.45	8.65	8	N, A, B
	14	2	19	12.16	21.95	16	11	10	N
Threaded	7	—	14	7.62	21.45	12	8	7	N, A, B
	19	—	16	10.16	21.45	11.45	8.65	8	N, A, B
	30	2	25	18.4	13.3	16	18.5	16	N



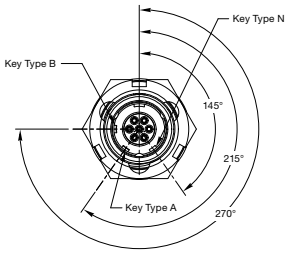
Contact Solder Cup Dimensions

No. of Pos.	Power Contacts	Signal		Power	
		J	K	J	K
7, 19	—	0.65	0.85	—	—
14	2	0.9	1.15	1.2	1.5
30	2	0.76	1	1	1.3

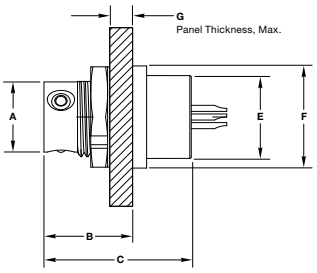
Metal-Shell Micro Circular Connectors

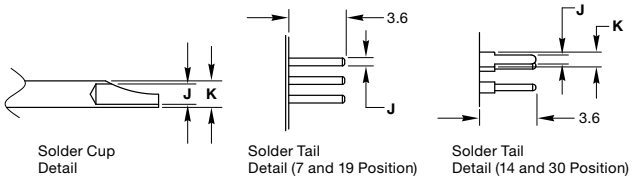
RECEPTACLE CONNECTORS

Keying



Panel-Mount Receptacle





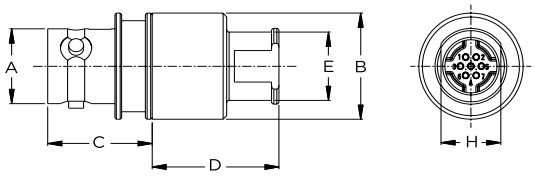
Panel-Mount Contacts

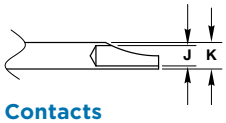
Contact Type	No. of Pos.	Power Contacts	Signal		Power	
			J	K	J	K
Solder Cup	7, 19	—	0.65	0.85	—	—
Solder Tail	7, 19	—	.5	—	—	—
	14	2	.5	.85	.7	1.15
	30	2	.5	.85	.7	1.16

Panel-Mount Receptacle

Coupling	No of Pos.	A (Dia.)	B	C	E (Dia.)	F (Dia.)	G
Push-Pull	7	9.82	12.41	20.64	11.6	14.3	3.2
	19	12.36	12.41	20.73	13.4	18	3.2
Bayonet	7	9.85	15.41	20.6	11.6	14.3	2.8
	19	12.05	15.41	20.5	14.4	18	2.8
	14	14.05	15.41	20.7	14.7	—	3.0
Threaded	7	10.54	13.44	18.6	11.6	14.3	3.2
	19	13.34	13.44	18.4	14.4	18	3.2
	30	—	13.15	19.7	19.3	—	3.6

In-Line Receptacle





Contacts

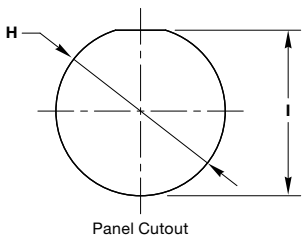
Coupling	No. of Pos.	Power Contacts	Signal Pin		Power Pin	
			J	K	J	K
Bayonet	7	—	0.65	0.85	—	—
	14	2	0.65	0.85	0.9	1.15
Threaded	30	2	0.65	0.85	0.9	1.15

In-Line Receptacle

Coupling	No of Pos.	Power Contacts	A (Dia.)	B (Dia.)	C	D	E (Dia.)	H
Bayonet	7	-	9.85	14	14	17	9	8
	14	2	14.05	18	14	14.7	15.9	15
Threaded	30	2	21.12	24	12	22	18.5	16

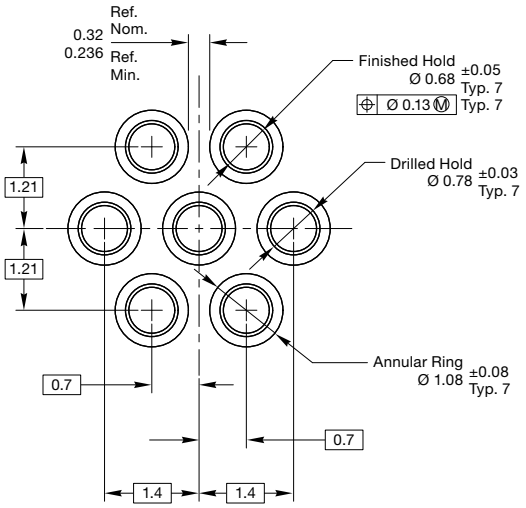
Panel Cutout Dimensions

Shell Size	H (Dia.)	I
M11	11.2	10.95
M14	14.4	13.5
M15	16.2	15.3
M22	22.5	21.5

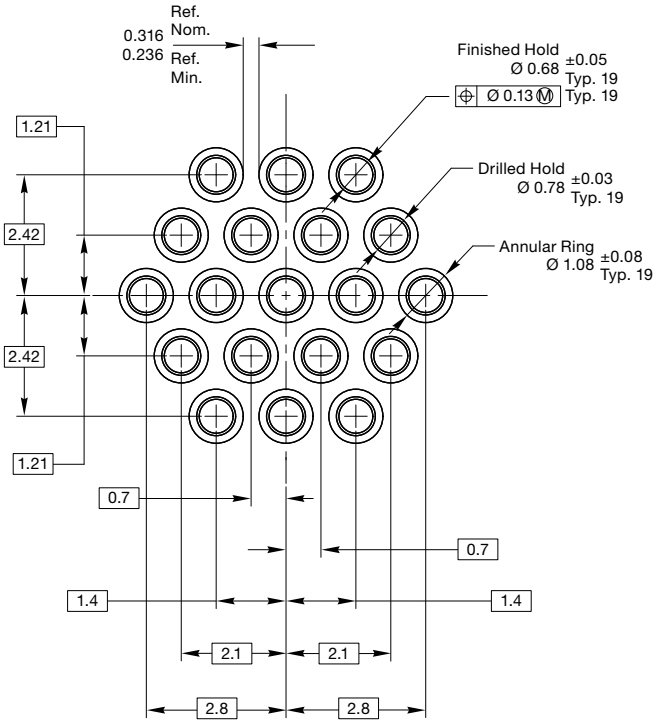


Metal-Shell Micro Circular Connectors

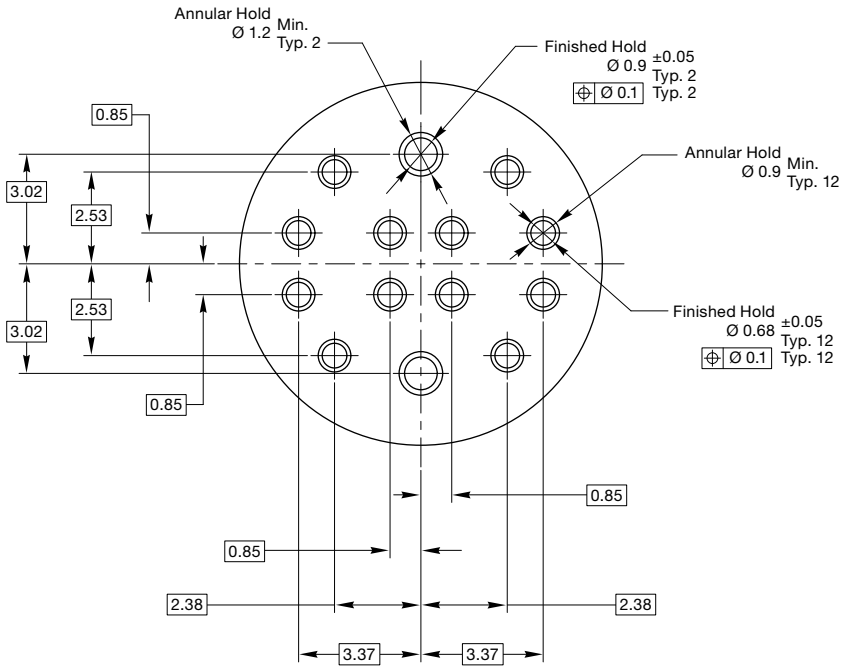
PCB LAYOUTS FOR SOLDER TAIL RECEPTACLES



7-Position Receptacle



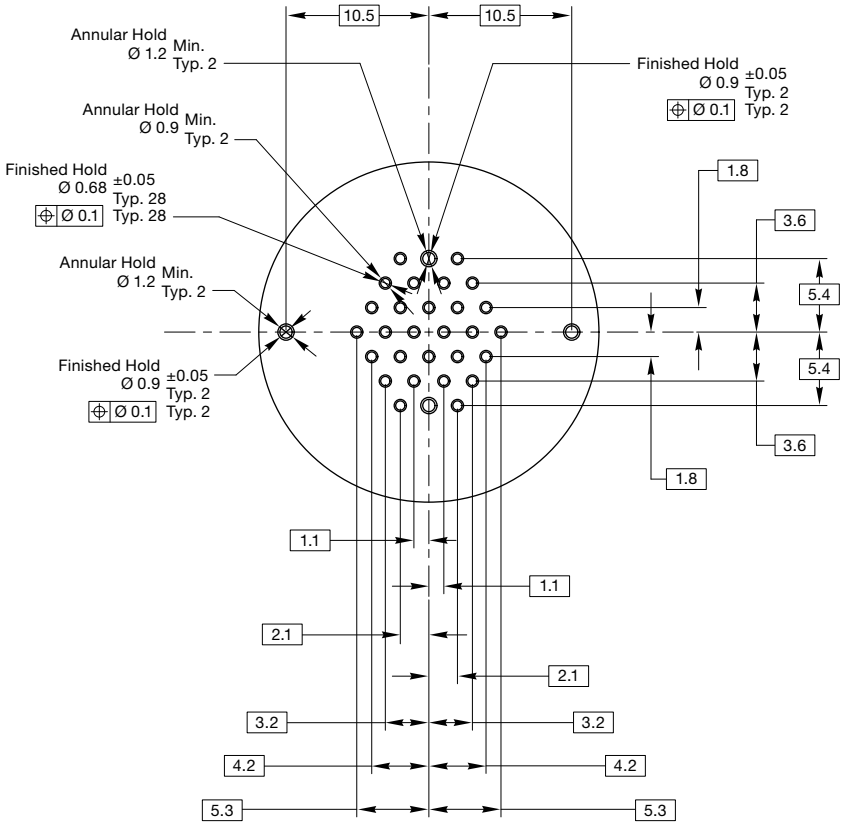
19-Position Receptacle



14-Position Hybrid Receptacle

Metal-Shell Micro Circular Connectors

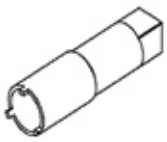
PCB LAYOUTS FOR SOLDER TAIL RECEPTACLES AND ACCESSORIES



30-Position Hybrid Receptacle

Nut Jig for 7P Receptacle Connectors

Part No. 2288181-1



Use with connectors 2174206-*, 2174209-*, 2174204-*, 2174207-*, 2174205-*, 2174208-*