



METAL-SHELL MICRO CIRCULAR CONNECTORS

High-Density Connectors For Rugged Reliability
And Configuration Flexibility

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

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.

More Choice

We give you more options in Metal-Shell Micro Circular connectors:

- Bayonet, push-pull, or threaded couplings
- Pin and socket or spring probe contacts
- Signal and hybrid signal/power versions
- Inline receptacles
- Band strap for termination of braided metallic shielding
- Range of shell sizes and positions

More Performance

Metal-Shell Micro Circular connectors from TE provide rugged reliability to withstand vibration and shock, and feature excellent electrical performance, a high mating life cycle, and IP67 environmental sealing.

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 milliohms 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

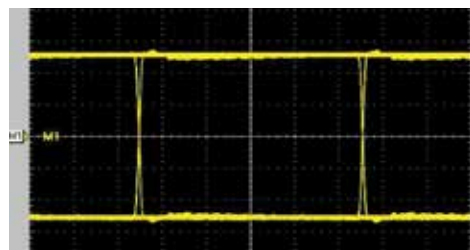
MATERIALS

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

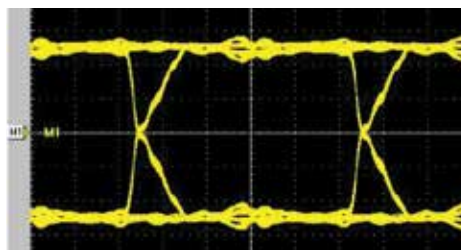
TECHNICAL DOCUMENTS

- **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

TE Components . . . TE Technology . . . TE Know-how . . .

AMP | Agastat | CII | Hartman | Kilovac | Microdot | Nanonics | Polamco | Raychem | Rochester | DEUTSCH
SEACON Phoenix | L.L. Rowe | Phoenix Optix | SEACON

Get your product to market faster with a smarter, better solution.

Metal-Shell Micro Circular Connectors

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		
		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		
M14	19	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		
		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		
M14	19	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.

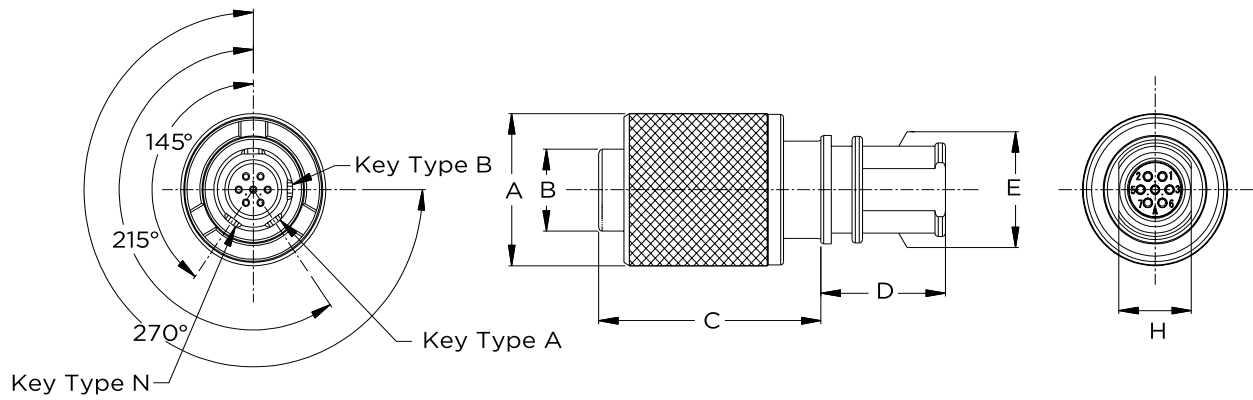
Hybrid Signal + Power Connectors: Pin and Socket Contacts

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

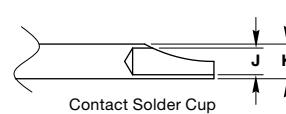
Plug Connectors

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
Threaded	14	2	19	12.16	21.95	16	11	10	N
	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

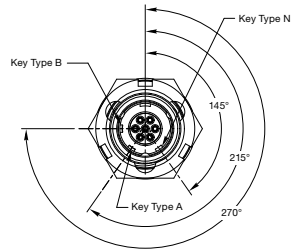


Contact Solder Cup Dimensions

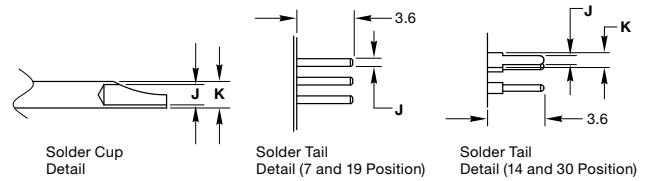
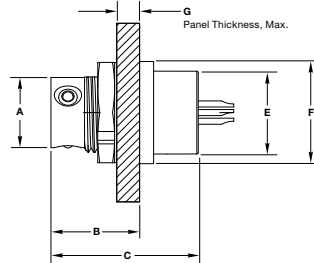
No. of Pos.	Power Contacts	Signal		Power	
		J	K	J	K
7, 19	—	0.65	0.85	—	—
14	2	0.9	1.15	1.2	1.5
30	2	0.76	1	1	1.3

Receptacle Connectors

Keying



Panel-Mount Receptacle



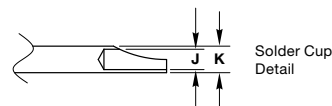
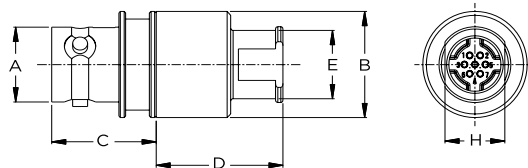
Panel-Mount Contacts

Contact Type	No. of Pos.	Power Contacts	Signal		Power	
			J	K	J	K
Solder Cup	7, 19	—	0.65	0.85	—	—
	7, 19	—	.5	—	—	—
Solder Tail	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

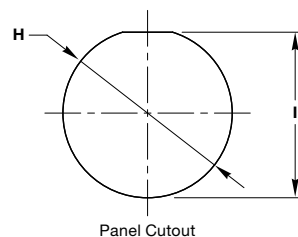
Coupling	No. of Pos.	Power Contacts	Signal Pin		Power Pin	
			J	K	J	K
Bayonet	7	—	0.65	0.85	—	—
	14	2	0.65	0.85	0.9	1.15
Threaded	30	2	0.65	0.85	0.9	1.15

In-Line Receptacle

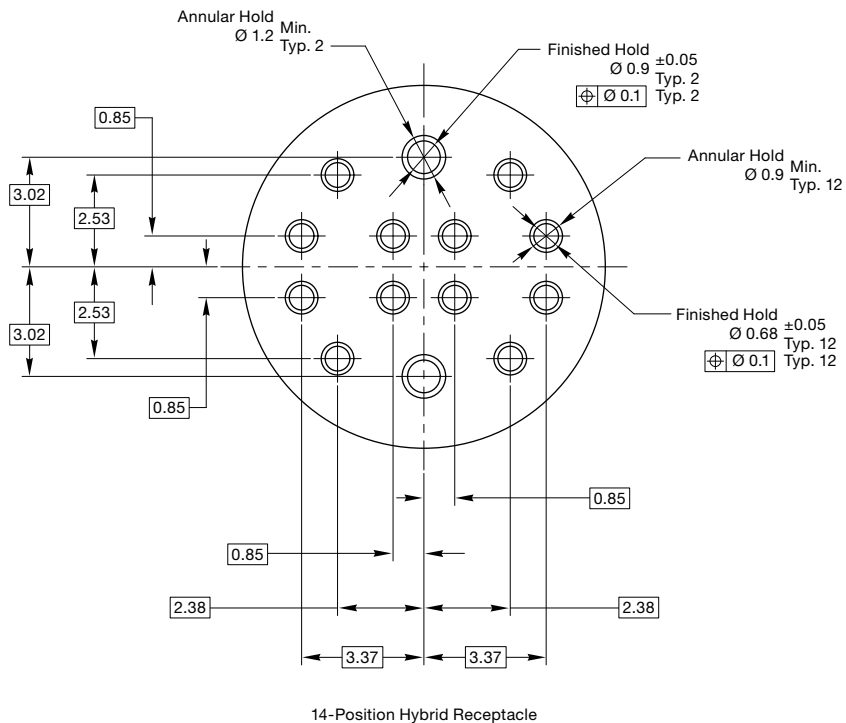
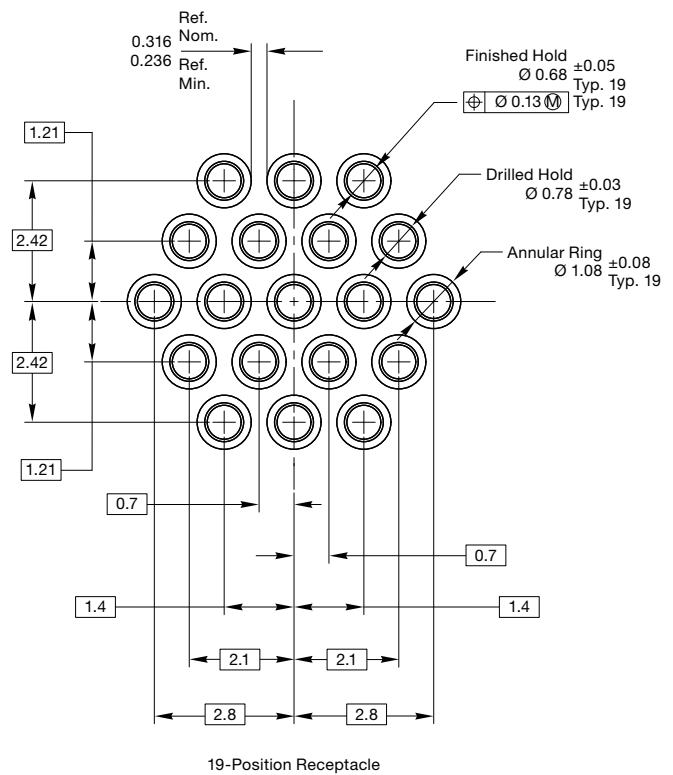
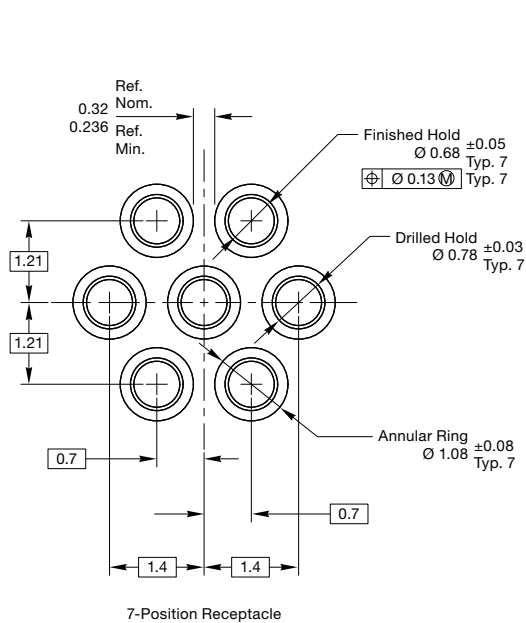
Coupling	No of Pos.	Power Contacts	A (Dia.)	B (Dia.)	C	D	E (Dia.)	H
Bayonet	7	—	9.85	14	14	17	9	8
	14	2	14.05	18	14	14.7	15.9	15
Threaded	30	2	21.12	24	12	22	18.5	16

Panel Cutout Dimensions

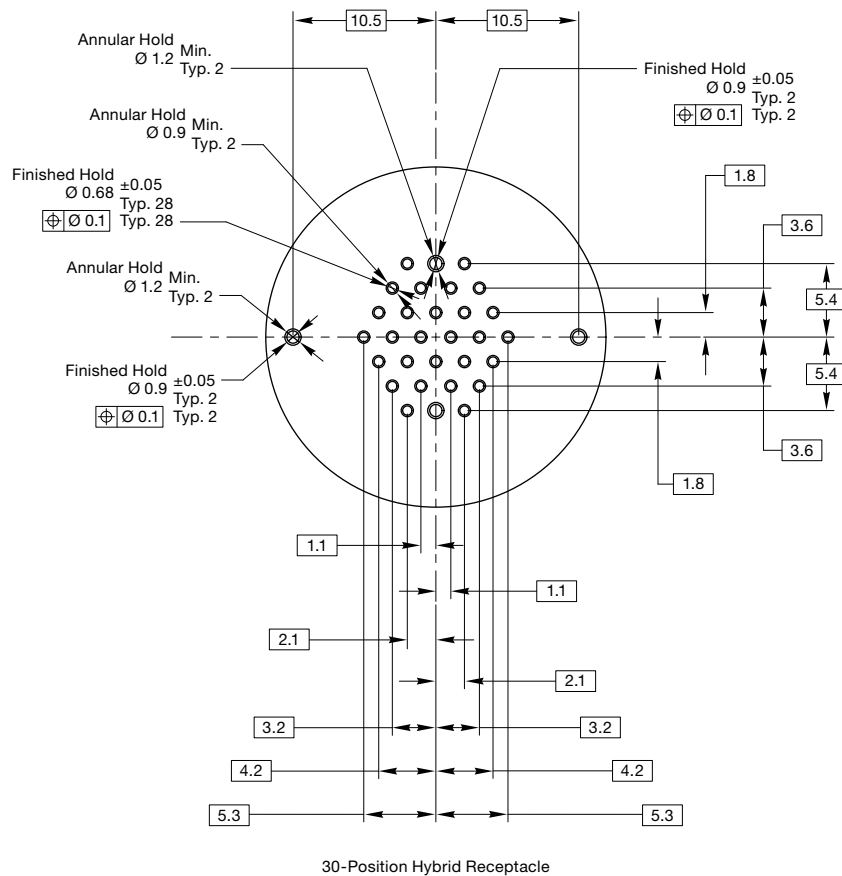
Shell Size	H (Dia.)	I
M11	11.2	10.95
M14	14.4	13.5
M15	16.2	15.3
M22	22.5	21.5



PCB Layouts for Solder Tail Receptacles

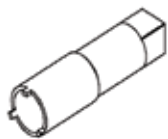


PCB Layouts for Solder Tail Receptacles and Accessories



Nut Jig for 7P Receptacle Connectors

Part No. 2288181-1



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

For More Information

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Consult TE for the latest dimensions and design specifications.