

AVAILABLE IN 0.050 AND  
0.100 CENTERLINE  
SPACING



SPECIALIZED CONTACT  
DESIGN FOR MAXIMUM  
PERFORMANCE



WIDE RANGE OF  
STANDARD OPTIONS  
AND FEATURES



WORLD CLASS  
APPLICATION  
TOOLING

# FFC (Flat Flexible Cable) Connectors

The TE Connectivity (TE) family of flat flexible cable connectors includes a wide variety of high density cable-to-board and cable-to-cable connectors designed for automated assembly. The family is composed of pin and receptacle housings on .100 [2.54] centerline contact spacing and receptacle housings on .050 [1.27] centerline contact spacing. Receptacle housings not only mate with the pin housings, but also mate with an array of printed circuit board headers from other TE connector lines, including AMPMODU connectors.

The FFC Family also includes the higher performance FLEXPAC connector system; the specialized TRIO-MATE connector system, and a ZIF [zero insertion force] connector family.

## Features and Benefits

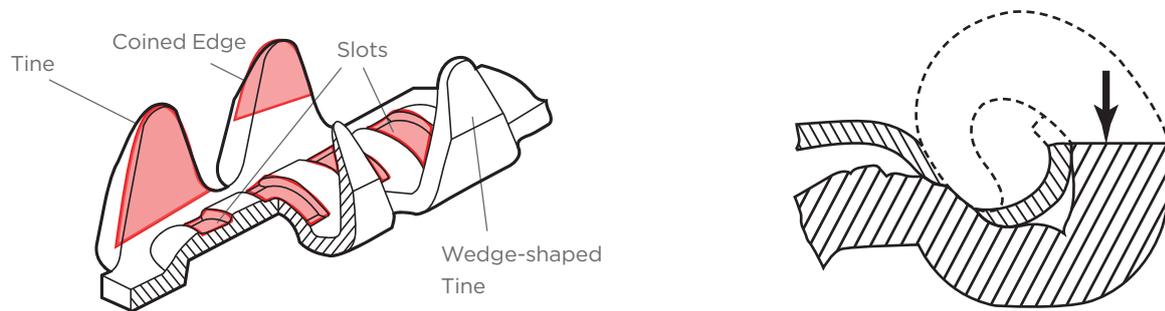
- 0.050 and 0.100 hard English centerlines
- TRIO-MATE for high retention force LIF applications
- ZIF options for higher mating cycles.
- Single and dual row options available
- Latching and polarizing options available
- Terminates FFC and FEC cable.

## Applications

- PCs – Desktop and Laptop
- Printers
- Camera
- Membrane Switches
- Disk Drives
- Data Systems
- Business Equipment
- Industrial Controls
- Appliance

# CONTACTS

- TE's FFC contacts are arguably the most important components of an FFC connection. TE's contact design is a competitive differentiator, and is well proven within the industry.
- TE's FFC contact is crimped onto FFC cables in a unique way, described here:
  - There are 4 separate tines on a TE FFC contact, each of which pierces through the cable insulation and curls back into the metal conductor, as seen in the cross section view below.
  - The combination of the tines' tapered design and the crimping operation produces maximum stored energy.
  - This design creates a residual force system with multiple points of redundancy, creating higher reliability in your electrical connection.
  - Each contact tine also has coined edges which assist in insulation piercing and greater surface area contact with the metal conductor, as well as 4 slots in the wire barrel area to accept the contact tines and develop a gas-tight connection.
- TE's FFC products can accommodate many combinations of applied centerline, contact gender, cable thickness, and plating requirements.



Base Number	Image	Centerline	Wire/Cable Type	Contact Type	Mating Area Plating	Crimp Area Plating	Packaging Method	Wire Range	Wire Insulation Diameter	Product Spec	Application Spec
487923		.050 in [1.27 mm]	FFC	Pin/Solder Tab	Tin, Tin-Lead	Gold, Tin-Lead	Strip	N/A	N/A	108-16022	114-16008
487940		.050 in [1.27 mm]	FFC	Pin/Solder Tab	Tin	Gold, Tin	Strip	N/A	N/A	108-16022	114-16008
487547		.050 in [1.27 mm]	FFC	Socket	Gold (P-P)	Gold, Tin-Lead	Strip	N/A	N/A	108-16022	114-16008
88976		.100 in [2.54 mm]	FFC	Pin	Gold (P-P), Tin, Tin-Lead	Gold	Strip	N/A	N/A	108-9024	114-16015
88117		.100 in [2.54 mm]	FFC	Pin	Gold (P-P), Tin, Tin-Lead	Gold, Tin-Lead	Strip	N/A	N/A	108-9024	114-16015
487561		.100 in [2.54 mm]	FFC	Pin/Solder Tab	Gold, Tin-Lead	Tin, Tin-Lead	Strip	N/A	N/A	108-16022	114-16008
88997		.100 in [2.54 mm]	FFC	Pin/Solder Tab	Gold, Tin-Lead	Gold, Tin-Leadt	Strip	N/A	N/A	108-9024	114-16015
487137		.100 in [2.54 mm]	FFC	Pin/Solder Tab	Tin-Lead	Nickel	Strip	N/A	N/A	108-9024	114-16015
485800		.100 in [2.54 mm]	FFC	Socket	Gold	Gold, Tin-Lead	Strip	N/A	N/A	108-9024	114-16015
487117		.100 in [2.54 mm]	FFC	Socket	Gold, Tin, Tin-Lead	Gold, Tin-Lead	Strip	N/A	N/A	108-9024	114-16015
788143		.100 in [2.54 mm]	FFC	Socket	Gold	Gold	Strip	N/A	N/A	108-9024	114-16015
487406		.100 in [2.54 mm]	FFC	Socket	Gold (P-P), Tin, Tin-Lead	Gold, Tin, Tin-Lead	Strip	N/A	N/A	108-9024	114-16015

\*Parts with Gold (P-P) listed in the Mating Area Plating column use Gold Performance Plating (for example, Gold over Palladium Nickel).

Base Number	Image	Centerline	Wire/Cable Type	Contact Type	Mating Area Plating	Crimp Area Plating	Packaging Method	Wire Range	Wire Insulation Diameter	Product Spec	Application Spec
494034		.100 in [2.54 mm]	Round Wire	Pin	Gold	Tin	Loose Piece	0.20-0.40 <sup>2</sup> mm [24-22 AWG]	.040 - .056 in [1.02 - 1.42 mm]	108-9024	114-16015
494033		.100 in [2.54 mm]	Round Wire	Pin	Gold	Tin, Tin-Lead	Strip	0.20-0.40 <sup>2</sup> mm [24-22 AWG]	.040 - .056 in [1.02 - 1.42 mm]	108-9024	114-16015
86658		.100 in [2.54 mm]	Round Wire	Pin	Gold (P-P)	Gold	Loose Piece	0.20-0.40 <sup>2</sup> mm [24-22 AWG]	.040 - .056 in [1.02 - 1.42 mm]	108-9024	114-16015
88048		.100 in [2.54 mm]	Round Wire	Pin	Gold (P-P)	Gold	Strip	0.03-0.15 <sup>2</sup> mm [32-26 AWG]	.025 - .048 in [.64 - 1.22 mm]	108-9024	114-16015
86656		.100 in [2.54 mm]	Round Wire	Pin	Gold (P-P)	Gold	Strip	0.20-0.40 <sup>2</sup> mm [24-22 AWG]	.040 - .056 in [1.02 - 1.42 mm]	108-9024	114-16015
86561		.100 in [2.54 mm]	Round Wire	Pin	Gold, Tin, Tin-Lead	Gold, Tin, Tin-Lead	Loose Piece	0.12-0.40 <sup>2</sup> mm [26-22 AWG]	.040 - .056 in [1.02 - 1.42 mm]	108-9024	114-16015
86557		.100 in [2.54 mm]	Round Wire	Pin	Gold, Tin, Tin-Lead	Gold, Tin, Tin-Lead	Strip	0.12-0.40 <sup>2</sup> mm [26-22 AWG]	.040 - .056 in [1.02 - 1.42 mm]	108-9024	114-16015
86566		.100 in [2.54 mm]	Round Wire	Socket	Gold, Gold (P-P), Tin, Tin-Lead	Gold, Tin, Tin-Lead	Strip	0.12-0.40 <sup>2</sup> mm [26-22 AWG]	.040 - .056 in [1.02 - 1.42 mm]	108-9024	114-16015
86571		.100 in [2.54 mm]	Round Wire	Socket	Gold (P-P)	Gold, Tin	Loose Piece	0.12-0.40 <sup>2</sup> mm [26-22 AWG]	.040 - .056 in [1.02 - 1.42 mm]	108-9024	114-16015
86657		.100 in [2.54 mm]	Round Wire	Socket	Gold (P-P)	Gold	Loose Piece	0.20-0.40 <sup>2</sup> mm [24-22 AWG]	.040 - .056 in [1.02 - 1.42 mm]	108-9024	114-16015
88017		.100 in [2.54 mm]	Round Wire	Socket	Gold (P-P)	Gold	Strip	0.03-0.15 <sup>2</sup> mm [32-26 AWG]	.025 - .048 in [.64 - 1.22 mm]	108-9024	114-16015
86655		.100 in [2.54 mm]	Round Wire	Socket	Gold (P-P)	Gold	Strip	0.20-0.40 <sup>2</sup> mm [24-22 AWG]	.040 - .056 in [1.02 - 1.42 mm]	108-9024	114-16015

Base Number	Image	Centerline	Wire/Cable Type	Contact Type	Mating Area Plating	Crimp Area Plating	Packaging Method	Wire Range	Wire Insulation Diameter	Product Spec	Application Spec
86773		.100 in [2.54 mm]	FFC and Round Wire	FFC to Round Wire	Gold	Tin	Strip	0.12-0.40 <sup>2</sup> mm [26-22 AWG]	.035 - .060 in [.89 - 1.52 mm]	108-9024	114-16015
86774		.100 in [2.54 mm]	FFC and Round Wire	FFC to Round Wire	Gold	Gold	Loose Piece	0.12-0.40 <sup>2</sup> mm [26-22 AWG]	.035 - .060 in [.89 - 1.52 mm]	108-9024	114-16015
487941		.050 in [1.27 mm]	FFC and Round Wire	FFC to Round Wire	Tin-Lead	Gold, Tin-Lead	Strip	N/A	N/A	108-16022	114-16008

\*Parts with Gold (P-P) listed in the Mating Area Plating column use Gold Performance Plating (for example, Gold over Palladium Nickel).

## HOUSINGS

- The second step in creating a multi-piece FFC connection is the cable side housing.
- The cable with contacts applied is loaded directly into this cable side housing to create a complete FFC Cable assembly.
- Standard FFC housings are loaded with the prepared FFC cable assembly before it is mated with a board side header (in wire-to-board solutions), or another FFC cable assembly (in wire-to-wire solutions).
- Housings are available in:
  - Standard or slimline (for low profile applications),
  - Single or dual row style (for increased density),
  - With or without latching (for increased retention),
  - With or without mounting ears (mounting ears provide increased cable or PCB retention).
- Note that in some cases, certain housing-header combinations will not be compatible with all contacts. To confirm compatibility of housing-header-contact combinations, please contact your local TE sales representative.



# FLEXPAC

- TE's FLEXPAC interconnect system is a multi-piece connector solution, consisting of a contact crimped to an FFC cable, a plastic housing, and a board side header.
- FLEXPAC connector system is designed for high quality and reliability, offering an array of locking and latching housing and header combinations as well as many polarization options to ensure proper mating.

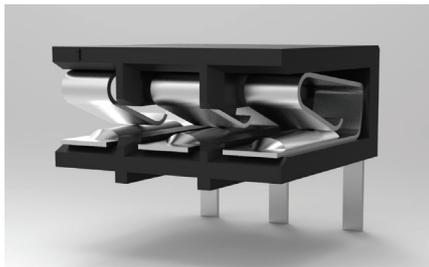
Base Number	1437249	1658665
Image		
Centerline	0.100	0.100
Contact Type	Socket	Socket
Plating	Gold	Tin

Part Number	1437250		1437251		1437252		
	Image		Image		Image		
Row	DUAL		SINGLE				
Style	STRAIGHT		STRAIGHT		RIGHT ANGLE		
	Gender		Gender		Gender		
Polarized	FEMALE		MALE		FEMALE		
	YES	NO	NO	YES	NO	NO	
YES	NO	NO	YES	NO	NO	YES	
NO	NO	NO	YES	NO	NO	YES	
4	X	X		X	X	X	
5				X	X	X	X
6				X	X	X	X
7				X	X	X	X
8		X		X	X	X	X
9				X	X	X	X
10				X	X	X	X
11				X	X	X	X
12	X			X	X	X	X
13				X	X	X	X
14		X		X	X	X	X
15				X	X	X	X
16	X			X	X	X	X
17				X	X	X	X
18	X			X	X	X	X
19				X	X	X	X
20		X	X	X	X	X	X
21				X	X	X	X
22				X	X	X	X
23				X	X	X	X
24	X			X	X	X	X
25				X	X	X	X
26	X			X	X	X	X
27				X	X	X	X
28	X	X		X	X	X	X
29				X	X	X	X
30	X	X		X	X	X	X
31				X	X	X	X
32	X			X	X	X	X
34	X			X	X	X	X
36	X	X		X	X	X	X
38	X	X		X	X	X	X
46	X			X	X	X	X
52	X			X	X	X	X
54	X			X	X	X	X
56	X			X	X	X	X
58	X	X		X	X	X	X
62	X	X		X	X	X	X

Base Number	1437254	1658548	1658549	1888291	1888292	1888290
Image						
PCB Mounting Orientation	Right Angle	Right Angle	Vertical	Vertical	Right Angle	Right Angle
Gender	Plug	Plug	Plug	Plug	Plug	Receptacle
Contact Type	Pin	Pin	Pin	Pin	Pin	Socket
Number of Rows	Dual	Single	Dual	Single	Dual	Single
Termination Method to PCB	Through Hole					
Contact Plating, Mating Area	Gold	Gold, Tin	Gold, Tin	Gold, Tin	Gold, Tin	Tin
Contact Plating, Termination Area	Tin-Lead	Tin	Tin	Tin	Gold, Tin	Tin
4		X		X		
5		X		X		
6		X		X		
7		X		X		
8		X	X	X	X	X
9		X		X	X	X
10		X	X	X	X	X
11		X		X	X	X
12	X	X	X	X	X	X
13		X		X	X	X
14		X	X	X	X	X
15		X		X	X	X
16	X	X	X	X	X	X
17		X		X	X	X
18		X	X	X	X	X
19		X		X	X	X
20		X	X	X	X	X
21		X		X	X	X
22		X	X	X	X	X
23		X		X	X	X
24	X	X	X	X	X	X
25		X		X	X	X
26		X	X	X	X	X
27		X		X	X	X
28		X	X	X	X	X
29		X		X	X	X
30	X	X	X	X	X	X
31		X		X	X	X
32	X	X	X	X	X	X
34	X	X	X	X	X	X
36	X	X	X	X	X	X
38	X	X	X	X	X	X
46	X	X	X	X	X	X
52	X	X	X	X	X	X
54	X	X	X	X	X	X
56	X	X	X	X	X	X
58	X	X	X	X	X	X
62	X	X	X	X	X	X

# TRIO-MATE

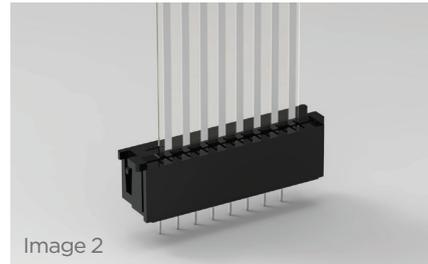
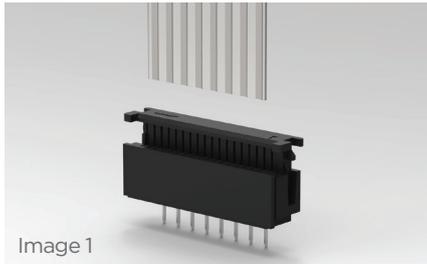
- TRIO-MATE is a 1 piece FFC connector system, meaning the Board side TRIO-MATE connector mates directly to a prepared FFC cable. This connection requires that the FFC cable have prepared contact pads already in place.
- TRIO-MATE'S unique contact design provides distinctive advantages for this connector type. As shown in this cross sectional views, TRIO-MATE uses a sequential contact layout. This means the connector makes contact with each sequential contact on the cable in 3 different locations (3 different insertion depths).
- As you insert the FFC cable, you first mate with contacts in position one. Then, as the cable is inserted further, you also mate with contacts in position 2, and inserted further still you also mate with contacts in position 3.
- This design allows for reduced cable insertion force, while keeping the same high extraction force.



Base Number	120628*	520315	487509	520415	520355	520314	487508	520353	176982
Image									
Centerline	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54
Orientation	Vertical	Vertical	Vertical	Vertical	Vertical	Right Angle	Right Angle	Right Angle	Right Angle
Solder Tail Style	Kinked Legs	Kinked Legs	Kinked Legs	Straight Legs	Straight Legs	Kinked Legs	Kinked Legs	Straight Legs	Straight Legs
Solder Tail Length	3.56	3.56	4.06	2.79	3.81	2.54	3.18	2.54	3.05
Product Spec	108-2038	108-2038	108-2038	108-2038	108-2038	108-2038	108-2038	108-2038	108-2038
Application Spec	114-2062	114-2062	114-2062	114-2062	114-2062	114-2062	114-2062	114-2062	114-2062
2		X	X	X		X			X
3		X	X	X					
4		X	X			X	X	X	
5		X	X			X	X		
6		X	X			X	X		
7		X	X			X	X	X	
8	X	X	X	X		X	X		
9		X	X			X	X		
10	X	X				X		X	X
11		X	X			X	X		
12		X	X			X		X	
13		X				X	X		
14		X	X				X		
15		X				X			
16		X		X	X	X	X		
17			X			X			
18									
19		X	X	X		X	X		
20	X	X	X	X	X				

\*Part includes special locking feature

- TE's ZIF, or zero insertion force connector system, is a 1 piece FFC connector system, meaning that the board side ZIF connector mates directly to a prepared FFC cable. This connection requires that the FFC cable have prepared contact pads already in place.
- ZIF connectors utilize a moving actuator to create a zero insertion force connection capable of achieving high mating cycles and providing a high level of cable retention and reliability.
- To use a ZIF style connector, simply slide the actuator to the open position, (as seen in image 1) insert the cable, and then slide the actuator to the closed position. (as seen in image 2)
- Closing the actuator creates the force required to make contact between the cable and the connector.



Base Number	Image	Centerline	Orientation	Product Spec	Application Spec	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40		
487925		2.54	Vertical	108-16025	114-16014		X						X	X	X		X	X	X		X																									
487576		1.27	Vertical	108-16025	114-16009								X	X	X	X	X	X	X				X	X				X			X													X	X	

## APPLICATION TOOLING

TE also offers a full range of tooling products for termination of FFC contacts onto FFC cables.

Ranging from hand tools to semi-automated bench tools, we can offer you the tooling solution that best fits your needs.

The new, semi-automated FFC bench tool is a key differentiator for TE's FFC product; this fully programmable tool allows for great ease of use when terminating FFC contacts.

This machine is an electrical driven semi-automatic assembly tool that uses different die sets to terminate reel-fed FFC contacts to manually supplied FFC cables. It terminates a predefined number of contacts to the supplied cable end. It also allows individual wire positions to be skipped during the assembly sequence if so directed.

For more information on TE's FFC tooling, please contact your TE sales representative.

### Features

- Alignment of the cable is effected in the machine
- Number of pins can be programmed
- Pitches between 1.27mm and 5.08mm can be programmed
- Individual wire positions can be skipped
- Operator friendly interface via touch screen
- Interchangeable applicators available for different products
- Quick change of the applicator

The termination machine is an electrical driven semi-automatic assembly machine that uses different die sets to terminate reel-feed FFC contacts to manually supplied FFC cables. The machine terminates a predefined number of contacts to the supplied cable end. Individual wire positions can be skipped during the assembly sequence.



# Frequently Asked Questions

## Question 1

Are you looking for a crimp termination solution or a direct cable mating solution?

### Answer 1

TE's FFC products can accommodate both termination styles. Our Standard FFC and FLEXPAC offerings can accommodate crimp termination, while our TRIO-MATE and ZIF offerings can accommodate direct cable mating.

## Question 2

What type of cable are you hoping to terminate?

### Answer 2

TE's FFC offering, along with its sister product, FPC, can solve your cable termination needs.

## Question 3

What centerline (or pitch) is required for your applications?

### Answer 3

The standard FFC centerlines are 0.05" (1.25mm) and 0.100" (2.54mm). However, we can accommodate smaller centerlines if needed with our FPC product line.

## Question 4

Do you require any application tooling?

### Answer 4

TE offers a full range of application tooling associated with our FFC products. Please review the tooling section to learn more.

## Question 5

Does your application require latching?

### Answer 5

TE's standard FFC offering and its FLEXPAC offering have latching options available.

## Question 6

Does your application require any agency approvals?

### Answer 6

Many of our FFC products carry agency approvals such as UL and CSA.

## FOR MORE INFORMATION

### TE Connectivity Technical Support Center

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\*as defined [www.te.com/leadfree](http://www.te.com/leadfree)

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