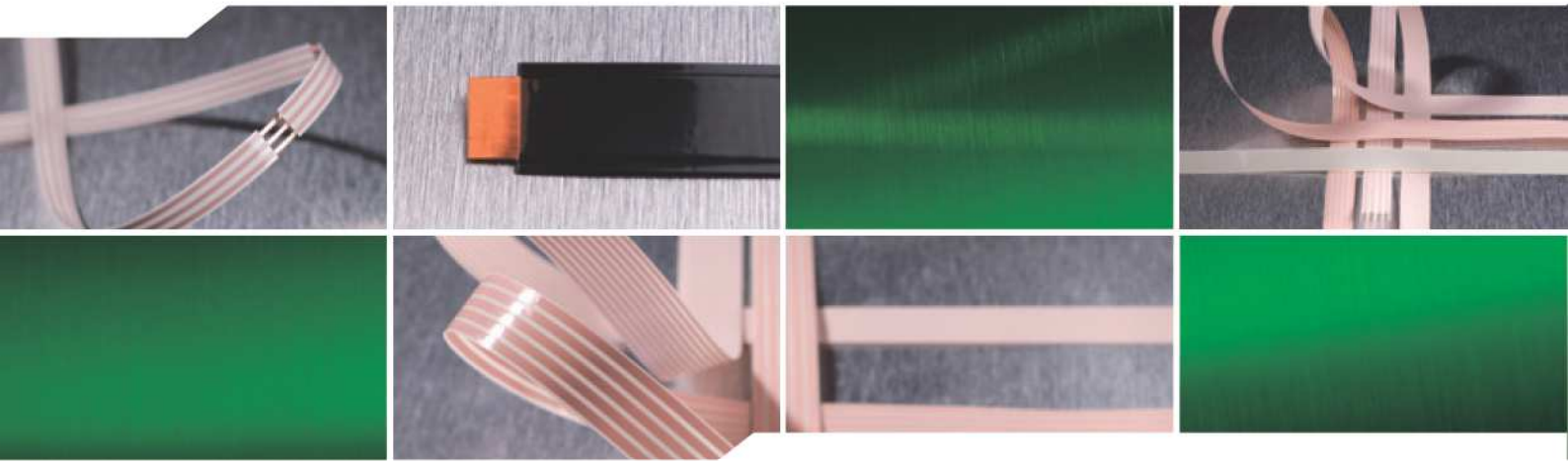
FLEXIBLEFLATCABLE

FFC (FLEXIBLE FLAT CABLE)



Flexible flat cables are laminated. They consist of tin-plated or bare copper conductors of various cross sections and top-quality insulation films.

- ***Extremely flexible***
- ***Very high resistance to vibration and reverse bending***
- ***Low weight***
- ***Easy and fast processing***

COPPER CONDUCTORS

Cut, flat conductors, no limiting width-thickness ratio, bare or tin-plated

Materials	SE-Cu 58 F20 - F37			E-Cu 58 F20 - F37		
Conductor thickness [mm]	0.035	0.050	0.076	0.100	0.125	0.200
Conductor width	from 0.28 mm					

Further materials and dimensions are available on request.

INSULATION

High-quality polyester films for the highest demands in various thicknesses

- ***(PET) polyethylene terephthalate***
- ***(PEN) polyethylene naphthalate***

DELIVERY OPTIONS

For example:

- ***Bulk spools***
- ***Stripped conductors with pre-defined spacing (window technology)***
- ***Cut to required length***
- ***Folded, bent***
- ***Crimp contacts and housings***
- ***Solder pins***

PITCHES

- All standard pitches, e.g. 1.27/2.54 or customized
- Different pitches and conductor cross sections available in one single cable

QUALITY

- 100% control by camera monitoring
- Micrographs

- ***Certification according to ISO 9001:2008***
- ***RoHS/REACH compliant***

Head Office/Corporate Management
Postfach 10 04 17
69444 Weinheim/Germany
Phone: +49 6201 962936

Chemnitz Branch
Forststraße 5
09224 Chemnitz/OT Grüna
Phone: +49 371 850086

Hohenstein-Ernstthal Branch
An der Baumschule 1
09337 Hohenstein-Ernstthal
Phone: +49 3723 665555

Internet
www.haufe-gmbh.com
e-Mail
mail@haufe-gmbh.com

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PRECISION FLAT STRIPS

CUTTING CENTRE

Cutting and spooling of precision strips of high run-lengths onto a broad range of spool bodies according to customer requirements.

- ***High run lengths***
- ***Highly precise***
- ***Burr-free***
- ***Tailor-made***

CUTTING PROCEDURES

Spool cutting
Circular cutting

MATERIALS

A wide variety of flat strips is available.
The following materials are, for example, subject to manufacturing:

- ***Copper***
- ***Stainless steel***
- ***Nonferrous metals***
- ***Plastics***

THICKNESSES

Potential thicknesses are material dependent and are determined by cutting and spooling tests.

SPOOLS

Precise spooling onto discs, K spools[1], HKV spools[2]. (further spools available on request)

[1] K spool: cylindrical barrelled delivery spool.
[2] HKV spool: cylindrical barrelled delivery spool with conical flanges

WIDTHS

From 0.4 mm to 600 mm

QUALITY

Cutting tool monitoring by:

- ***Cutting force measurement***
- ***Micrographs***

Certified acc. to ISO 9001:2008

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e-Mail
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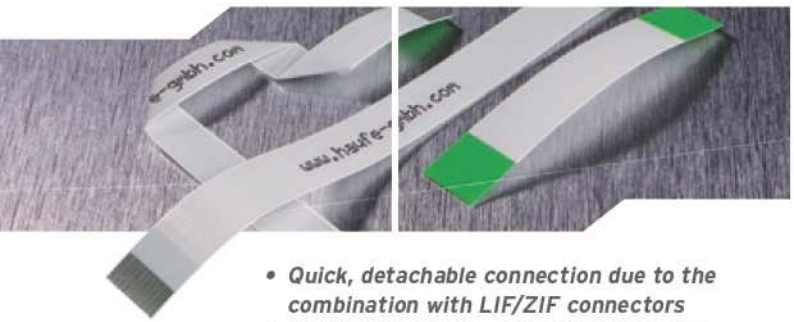
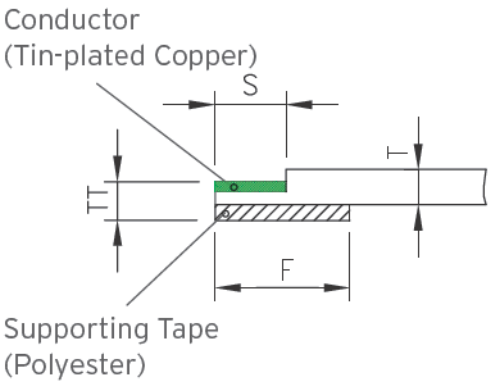
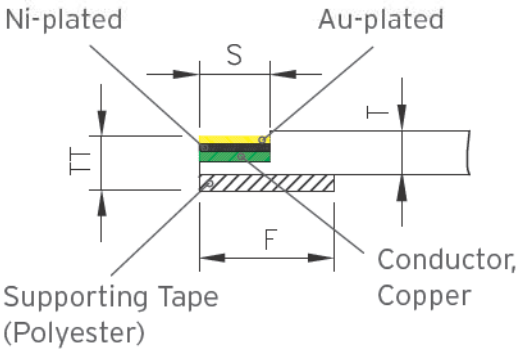
FLEXIBLE PRINTED CIRCUIT BOARD CONNECTORS

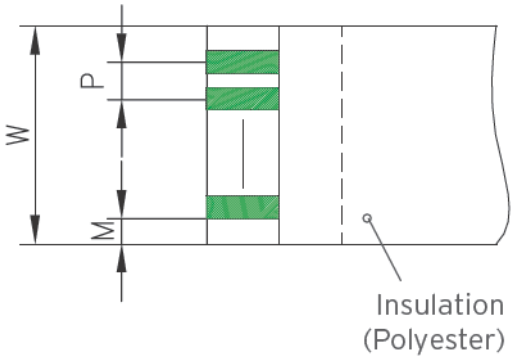
JUMPER – F (FLAT)



- ***Quick, detachable connection due to the combination with LIF/ZIF connectors***
- ***Cable preparation with crimp contacts***
- ***Extremely resistant to flexural stress (High Flex, Super Fine)***







INSULATION MATERIALS

	POLYESTER	NOMEX	PEN
Working temperature	- 40°C to + 105°C	- 40°C to + 130°C	- 40°C to + 155°C
Soldering temperature	250°C/4sec	260°C/5sec	260°C/5sec

Kapton data available on request

TECHNICAL DATA

P	**Pitch**	**mm**	**0.5**	**0.8**	**1**	**1.25**	**1.27**	**1.5**	**2.5**	**2.54**
n	Number of poles		5 – 60	5 – 80	3 – 65	3 – 50	3 – 50	2 – 40	2 – 25	2 – 25
W	Total width		(n + 1) x P							
	Conductor material		Cu according to EN 13599 tin-plated/partially nickel-plated, gold-plated							
	Conductor thickness	mm	SF/Super Fine = 0.035; HF/High Flex = 0.05; S/Standard = 0.1							
			HF;SF	SF;HF;S	SF;HF;S	SF;HF;S	SF;HF;S	SF;HF;S	SF;HF;S	SF;HF;S
	Conductor width	mm	0.3	0.5	0.7	0.8	0.8	0.8	1.57	1.57
TT	Cable thickness i. t. mating area		0.3 +/-0.05 mm							
S	Exposed length		Standard 4 – 5 mm							
F	Length supported by tape		Standard 8 – 10 mm							
	Cable end design		Type A – F (see page 2)							

ELECTRIC PARAMETERS FOR THE STANDARD CONDUCTOR THICKNESS

		0.05 mm	0.1 mm						
Current load	A	0.5	1	1	1.5	1.5	2	3	3
Rated voltage	V (DC)	30	100	200	200	200	200	300	300
Proof voltage	V (DC)	100	300	700	1000	1000	1500	1500	1500
Insulation resistance		> 10^{10} Ω	> 10^{10} Ω						

Design and dimensioning according to customers' requirements.

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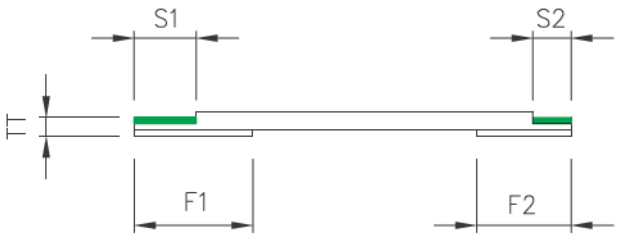
FLEXIBLE PRINTED CIRCUIT BOARD CONNECTORS

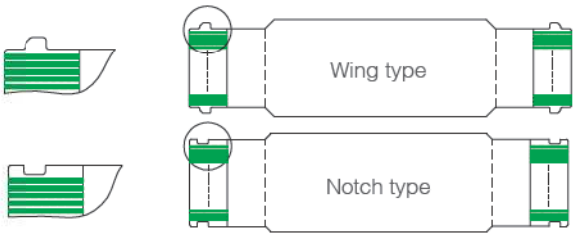
JUMPER – F (FLAT)

CONDUCTOR END DESIGN

Type A	2 supporting tapes F1 and F2 on the same side	
Type B	Side 1: supporting tape F1 Side 2: stripped, no supporting tape	
Type C	No supporting tape Stripped at both ends	
Type D	2 supporting tapes F1 and F2 on the opposite sides	
Type F	Side 1: stripped, no supporting tape Side 2: prepared for crimps	

SPECIAL DESIGN (X)

- Wing type or wing/standard type
- Notch type or notch/standard type



ORDER CODE

F	S/Sn	1.0	A	24	/	50.8	E	5	-	5	-	10	-	10	-	X

Conductor Type
S = Standard
SF = Super Fine
HF = High Flex

Au = Gold-plated
Sn = Tin-plated

Pitch
Conductor centre-to-centre spacing:
0.5 · 0.8 · 1.0
1.25 · 1.27 · 1.5
2.5 · 2.54

Stripping Type
Stripping/Type of Connection

Pole Number
see Technical Data

Insulated Length (mm)
Freely selectable

Insulation Material
E = Polyester
N = Nomex
P = PEN
K = Kapton *(on request)*

Exposed Length (mm)
Standard:
4 – 5 mm

Length Supported by Tape (mm)
Standard:
8 – 10 mm

Special Design
e.g. - Imprint
- Folding
- Wing/Notch

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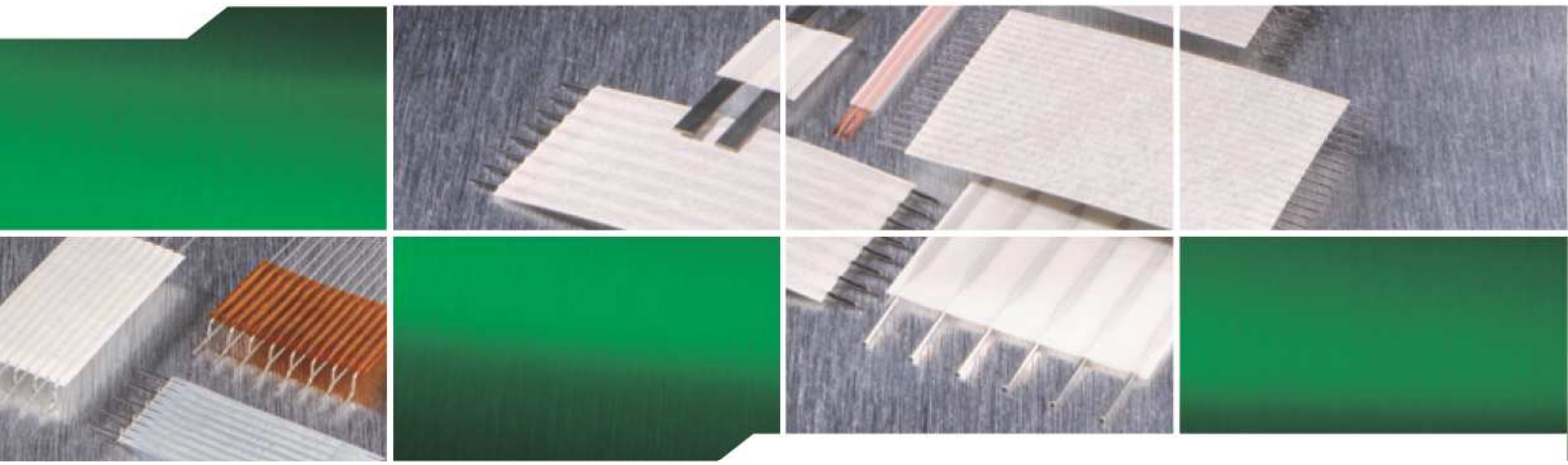
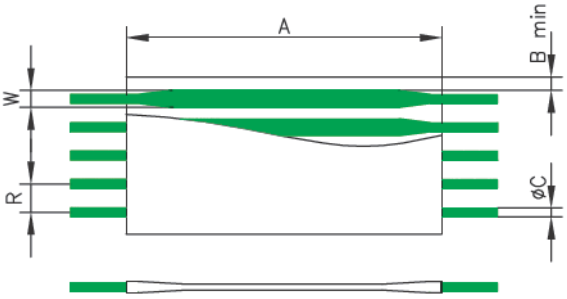
FLEXIBLE PRINTED CIRCUIT BOARD CONNECTORS

JUMPER - RFR - RF (ROUND-FLAT-ROUND/ROUND-FLAT)



- ***Flexible PCB connectors for plugging and soldering***
- ***Flexible, space saving***
- ***Short delivery times***
- ***Low costs***
- ***SMD assembly (taping)***
- ***Combinable connection versions***
- ***Customizable with connectors and crimp contacts***



INSULATION MATERIALS

	POLYESTER	NOMEX	PEN
Working temperature	- 40°C to + 105°C	- 40°C to + 130°C	- 40°C to + 155°C
Soldering temperature	250°C/4sec	260°C/5sec	260°C/5sec

Kapton data available on request

ELECTRICAL PARAMETERS FOR PITCH 2.54

Capacitance	9.0 pf/ft	10.1 pf/ft	10.5 pf/ft
Characteristic impedance	123 Ω	119 Ω	102 Ω

TECHNICAL DATA

R	Pitch	mm	1	1.25	1.27	1.9	2.0	2.54	3.18	3.81	3.96	5.08
n	Number of poles		5 - 50	4 - 50	3 - 50	3 - 35	3 - 30	2 - 25	2 - 20	2 - 17	2 - 17	2 - 13
C	Pin diameter	mm	0.32	0.32	0.32	0.32	0.41	0.51	0.51	0.51	0.51	0.51
	Wire cross section	AWG	28	28	28	28	26	24	24	24	24	24
W	Conductor width	mm	0.7	0.75	0.75	0.75	1.35	1.5	1.5	1.5	1.5	1.5
B	Min. lateral insulation		0.3 mm									
A	Insulated length		min. 12.7 mm (customized)									
	Conductor material		Cu acc. to EN 13599 min. 1.5 µm tin-plated									
Rated voltage		V (DC)	200	200	200	200	200	300	300	300	300	300
Proof voltage		V (DC) min.	700	1100	1100	1500	1500	1500	1500	1500	1500	1500
Current load		A	1.0	1.5	1.5	1.5	2.0	3.0	3.0	3.0	3.0	3.5
Insulation resistance			$>10^{10}$ Ω									

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09337 Hohenstein-Ernstthal
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e-Mail
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FLEXIBLE PRINTED CIRCUIT BOARD CONNECTORS

JUMPER - RFR - RF (ROUND-FLAT-ROUND/ROUND-FLAT)

ORDER CODE

FLPV	1	N	25.4	D	10	L1

Insulation Material:
N = Nomex
E = Polyester
P = PEN
K = Kapton *(on request)*

Type of Connection*

Number of Poles
see Technical Data

Pitch
Centre-to-centre spacing between conductors:

code	1	2	3	4	5
mm	1.27	2.54	3.18	3.81	5.08
code	**6**	**7**	**8**	**9**	
mm	1.90	2.0	1.25	1.0	

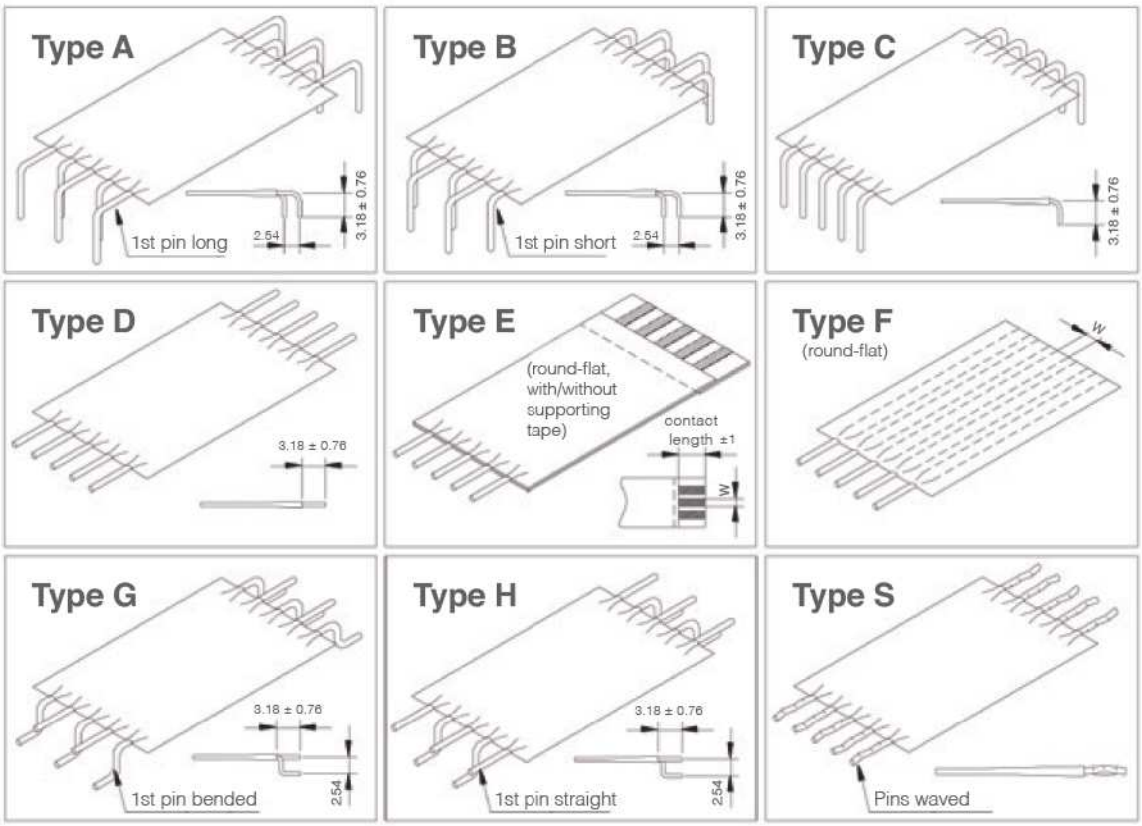
Insulated Length (mm)
freely selectable

Special Pin Length:

code	L1	L2	L3	L4
mm	2.85	3.10	3.40	3.80
code	**L5**	**L6**	**L7**	
mm	4.10	4.50	6.50	

Standard: 3.18 ± 0.5 mm

Types of Connection:



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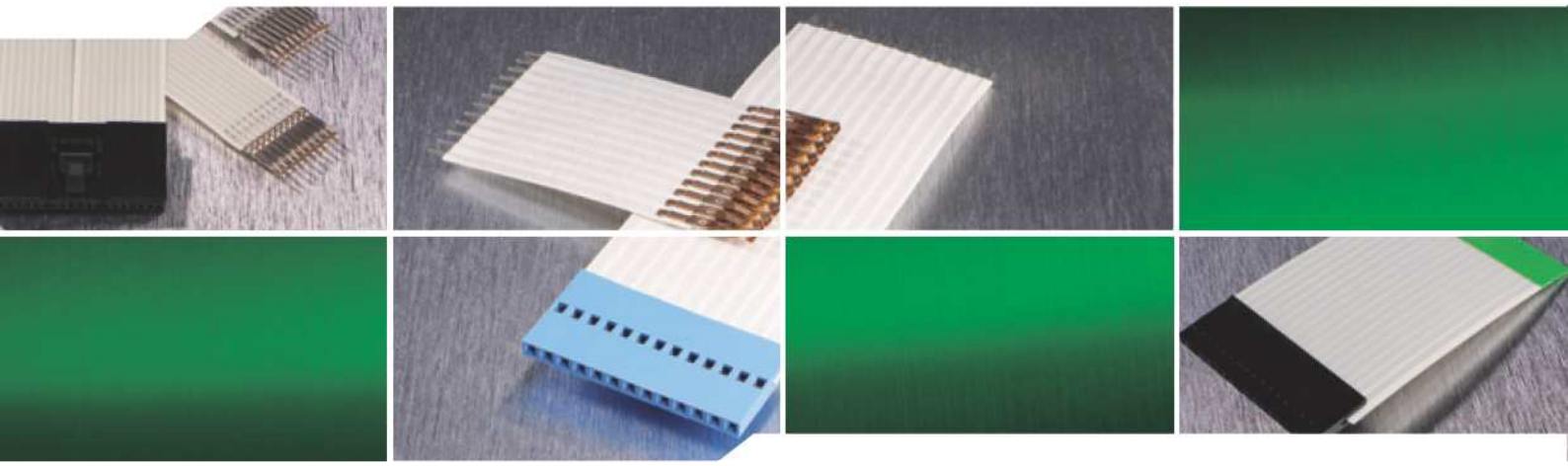
FLEXIBLE PRINTED CIRCUIT BOARD CONNECTORS

FLEXCRIMP



Plugging system for FFC cables, wire-to-board and wire-to-wire connections.
Preparation of jumpers and FFC cables with film crimp contacts from different manufacturers.

- ***Quick assembly***
- ***Compact and detachable connections***
- ***Solder joints possible***
- ***Pitches 1.27 mm (0.050") and 2.54 mm (0.100")***
- ***Tin-plated or gold-plated crimp contacts***

MANUFACTURERS

Preferentially, plug-in connectors from **TE Connectivity (Tyco)** are used.
Nikomatic and **FCI**-connectors are also possible.

CONTACTS

Product numbers of contacts preferentially used by **TE Connectivity (Tyco)**.

PITCH	1.27 mm (0.050")	2.54 mm (0.100")
Female contact	1 - 487547 - 1 (gold-plated)	2 - 487406 - 3 (gold-plated) 2 - 487406 - 4 (tin-plated)
Male contact	-	88117 - 7 (tin-plated)
Soldering pin	487923 - 4	1 - 88997 - 2 (tin-plated)

Further contacts available on request.

Housings

A wide range of housings is possible.
Examples of the most common **TE Connectivity (Tyco)** housing types are given in the table below:

PITCH	1.27 mm (0.050")	2.54 mm (0.100")
without interlock	X - 487544 - X	X - 88859 - X
with interlock	X - 487545 - X	X - 487526 - X

X varies according to the number of poles. | We are pleased to advise you on the selection of products.

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