



FLAT FLEXIBLE CABLES



STANDARD PRODUCTS

Nicomatic FFC cables are used in board to board interconnections and can be soldered or used with ZIF/LIF



FFC VALUE ADDED OPTIONS

Laser & die cutting, bends creasing, variable pitch, video cables....

OTHER NICOMATIC FLAT CABLE TECHNOLOGIES TERMINATED WITH CRIMPFLEX™

Jumper cables, Microflex™ harness, Butt & staple crimps...



INTRO

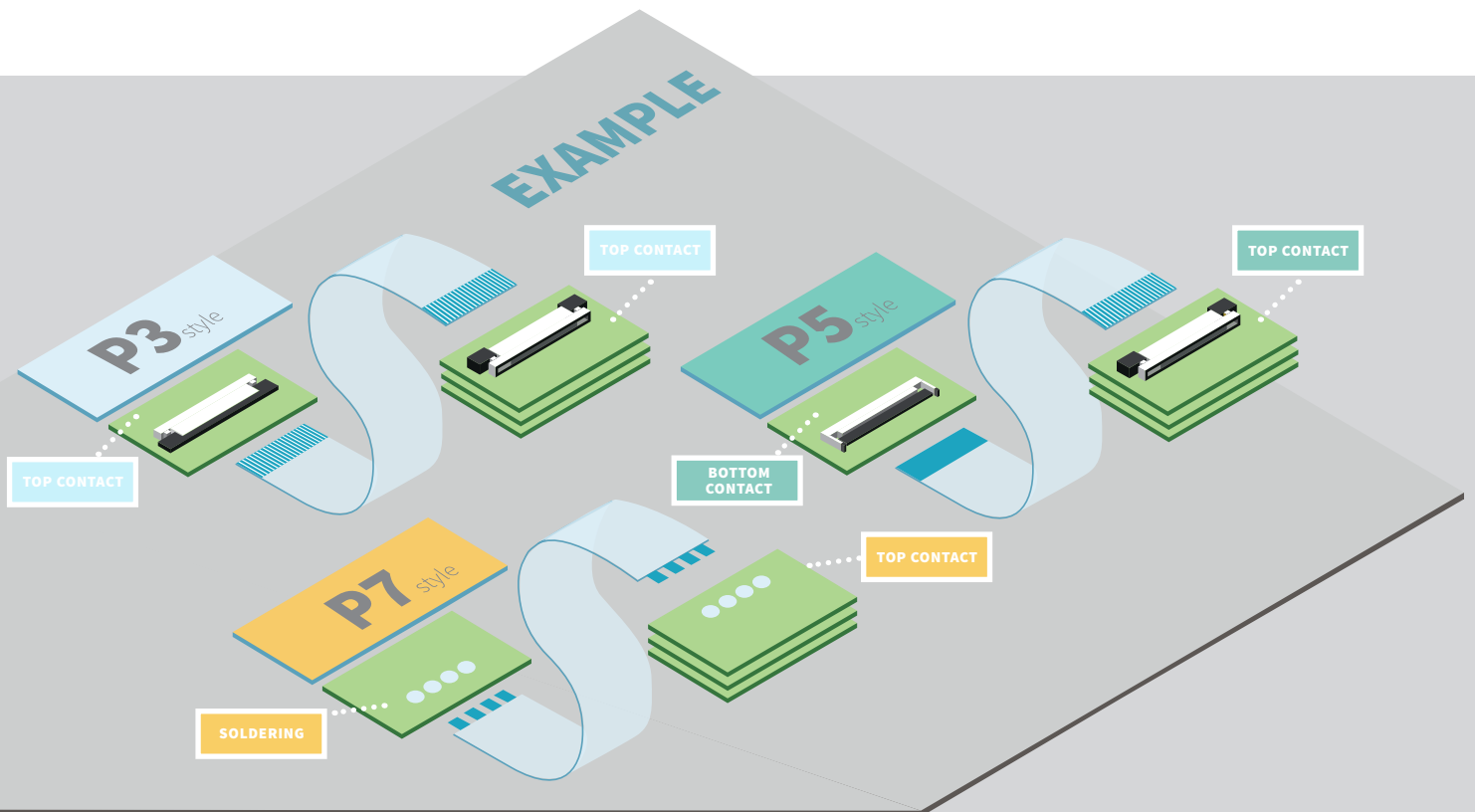
FFC - Flat Flexible Cables

Nicomatic's Flat Flexible Cable consists of tin plated copper conductors laminated between polyester films with a thermal adhesive for durability. With pitch density down to 0.50 mm and capable of millions of cycles in high flexing environments, FFC cables are used in a wide variety of electronic applications for board to board interconnections. The cables can be directly soldered or used with ZIF or LIF type connectors.




Nicomatic provides a broad range of FFC's


- Standard sizes are from 0.5 mm to 2.54 mm pitches (0.5, 1, 1.25, 1.27 or 2.54 mm)
- Other pitches also possible upon request
- Connection styles: different stripping types for all your needs (with or without reinforcement or soldering).
- Number of conductors: from 1 to 250 depending on style
- Length between 0015 and 9999 mm, continuous length available
- Different stiffener lengths
- Gold plating to prevent galvanic corrosion of dissimilar metals
- Shielding for EMI/RFI protection
- ZIF/LIF end preparation customized to your supply
- Tailor made customized cables




Main customer benefits...




FULL IN-HOUSE




100% VIDEO CONTROL



NO MIN. ORDER



SHORT LEAD TIME



UP TO 105°C (POLYESTER)

...don't forget

- Lightweight & space saving construction
- Ideal for microminiature electrical connections between PCB's, display boards etc.
- Flexibility and high life expectancy at elevated temperatures
- Compatible with industry-standard ZIF/LIF connectors
 - Customized options to your requests
- Easy to order with our standard part numbering system



Standard FFC

- Pitches from 0.5mm to 2.54mm
- UL approved: -55°C to +105°C
- Soldered or used with ZIF/LIF connectors



Gold plated FFC

- No Galvanic corrosion
- Whisker free
- Salt spray resistance
- High performance w/gold connectors



Shielded FFC

- EMI / RFI protection
- 3 grounding style options



FFC Ground options

- Internal ground
- External ground
- Floating ground



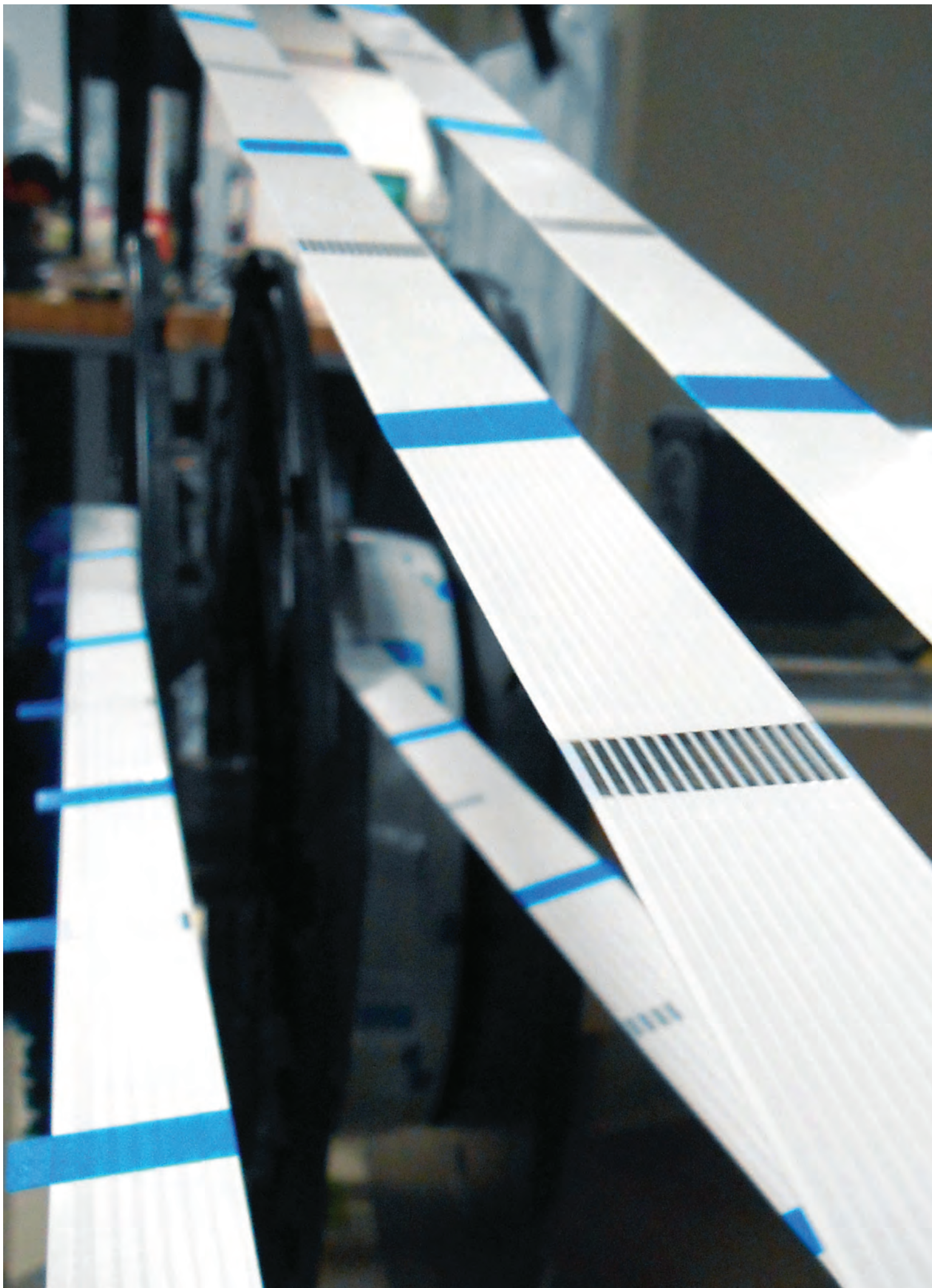
Specific and custom options

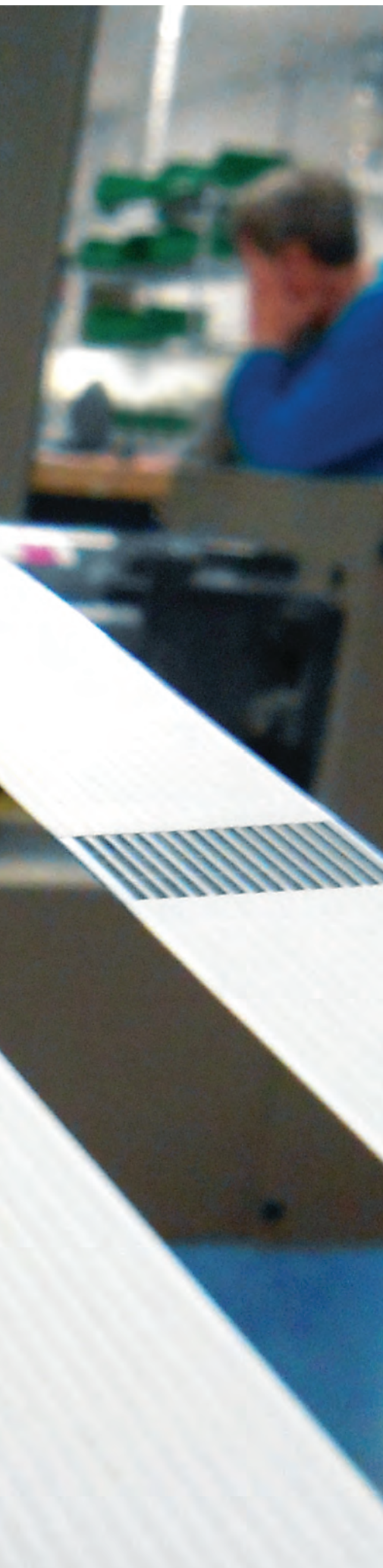
- Laser & die cutting
- Bends & creasing
- Black & polyimide materials
 - Variable pitch
- SMD placements with connections
 - Video cables
- Flexcoil, bulk supply



Related products terminated with Crimpflex™

- Jumper cables 1.27mm & 2.54mm pitch
- Microflex™ Hi-Rel flexible harness
- Discrete cable to flat cable connection
 - Butt & staple crimps





TECHNOLOGY & APPLICATIONS



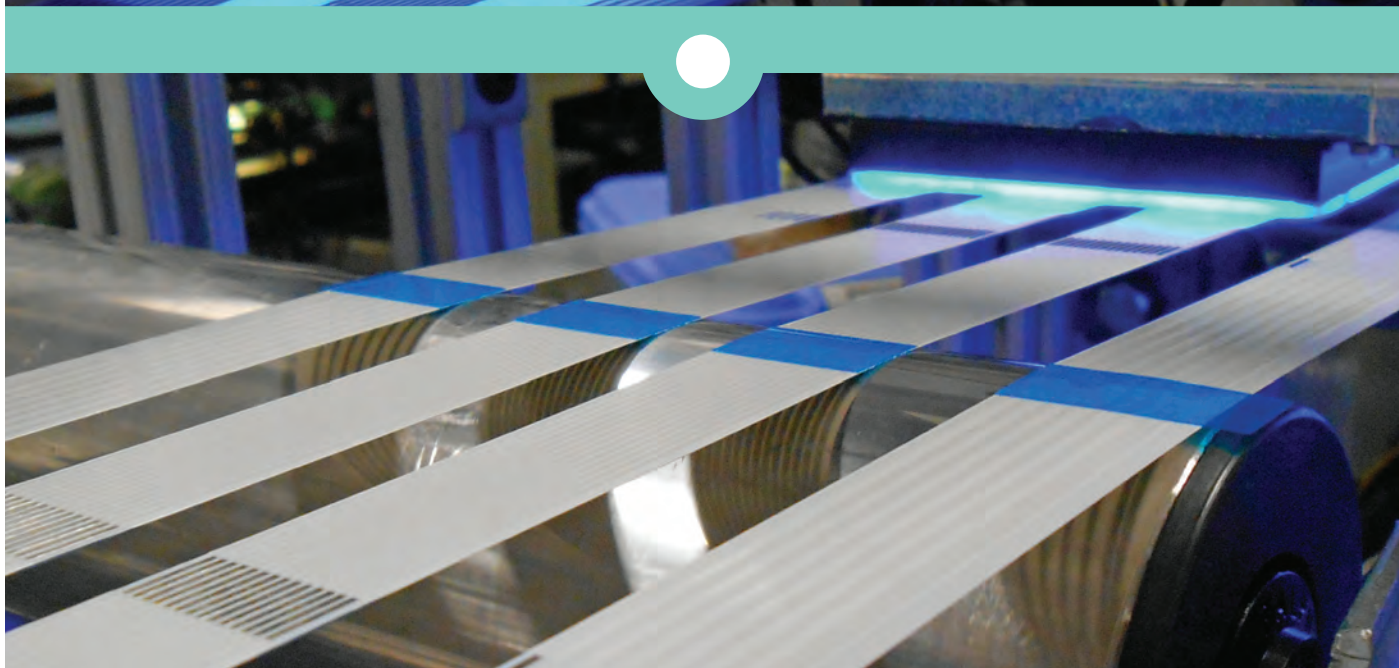
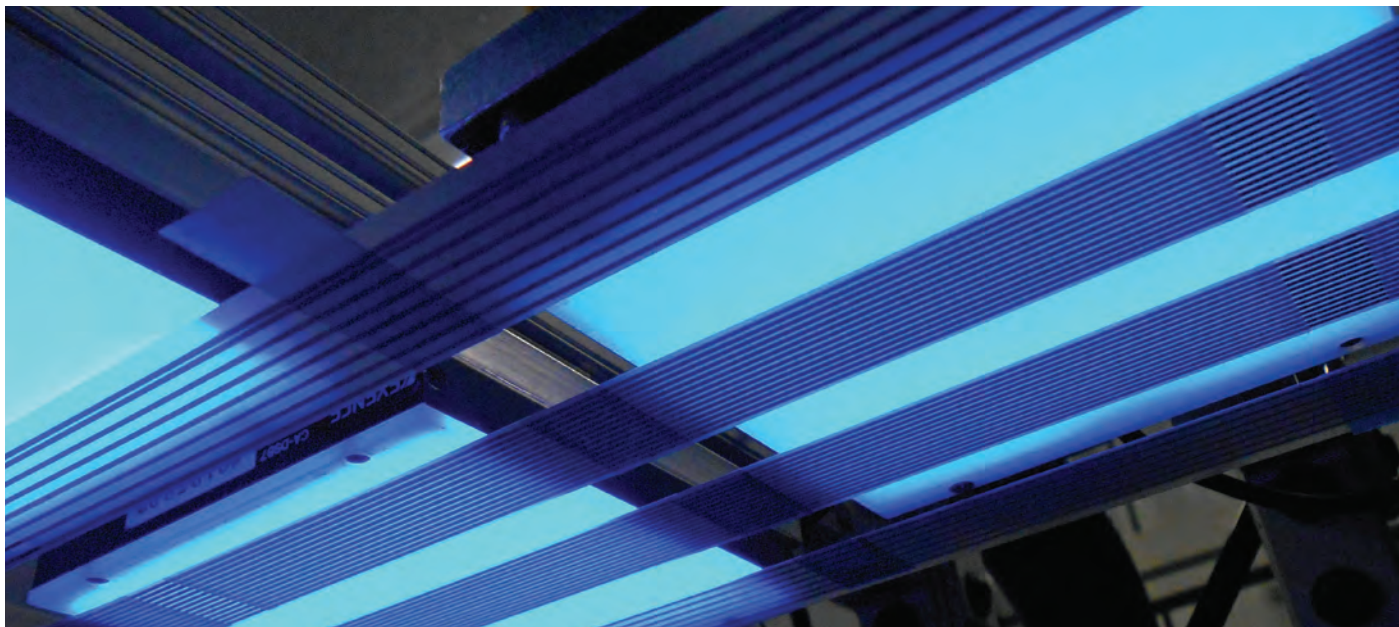
Quality guaranteed by an efficient automated production

Nicomatic has been a manufacturer of FFC cables for many years & controls FFC cable production from lamination to insulation, laser cutting & shielding.

Thanks to a 100% control of the manufacturing process, Nicomatic ensures the quality and lead-time of our products, as well as a wide range and flexibility to specific requirements. Our FFCs are used in a wide variety of electronic applications as board to board interconnections.

In order to meet the requirements of the high-technology electronics market, Nicomatic conforms to EN9100 and ISO9001 certification to build its quality system.

The control of all steps from product conception to delivery allows our clients to obtain a product specifically adapted to their needs. Our strategy of continuous quality improvement ensures long term development and growth for all of Nicomatic's partners. Nicomatic is compliant with RoHS and REACH requirements.



MANUFACTURING PROCESS

All of Nicomatic's FFC products are manufactured in-house. Since we do not outsource the production process, we are able to offer quicker turn-around times (from two weeks lead time). We offer wide customization choices.

We develop FFCs that are specific to your design needs based on the necessary lengths, contacts, plating, and conductors. Lastly, our manufacturing process limits quality issues & product failures & ensure superior performance.

Quality

EN9100 & ISO9001

In order to meet the requirements of the high-technology electronics market, we conform to EN9100 & ISO9001 certification to build our quality system. The control of all steps from product conception to delivery allows our clients to obtain a product specifically adapted to their needs.

REACH & RoHS

Nicomatic's strategy of continuous quality improvement ensures long term development and growth for all of our partners. Our company is compliant with RoHS and REACH requirements.

High Standards

The company's commitment to provide even higher levels of product quality and customer service is inspired by LEAN Management, and is driven by an internal continuous improvement process called "LEXOR".



EN 9100: 2009 EN9001: 2008

Applications



Industry
& robotics



Consumer
& household
electronics



Medical



Automotive



Security



Aeronautics IFE
& lighting

TECHNICAL DATA

Product specs with added value options

Our standard FFCs are capable of millions of cycles in high flexing environments, work at high temperatures, and are UL approved. The gold version guarantees the absence of tin whiskers at a small pitch. Different types of stripping and reinforcement tapes are offered, dependent on the connection type: P3, P5, P7 or P8. Our automatic P/N builder online allows you to easily find the product that will fit your needs.

Our FFCs are designed for board-to-board interconnections in a wide variety of electronic systems. Nicomatic Flat Flexible Cables (FFC) are made up of tin plated copper conductors laminated between polyester films with a thermal adhesive for durability.

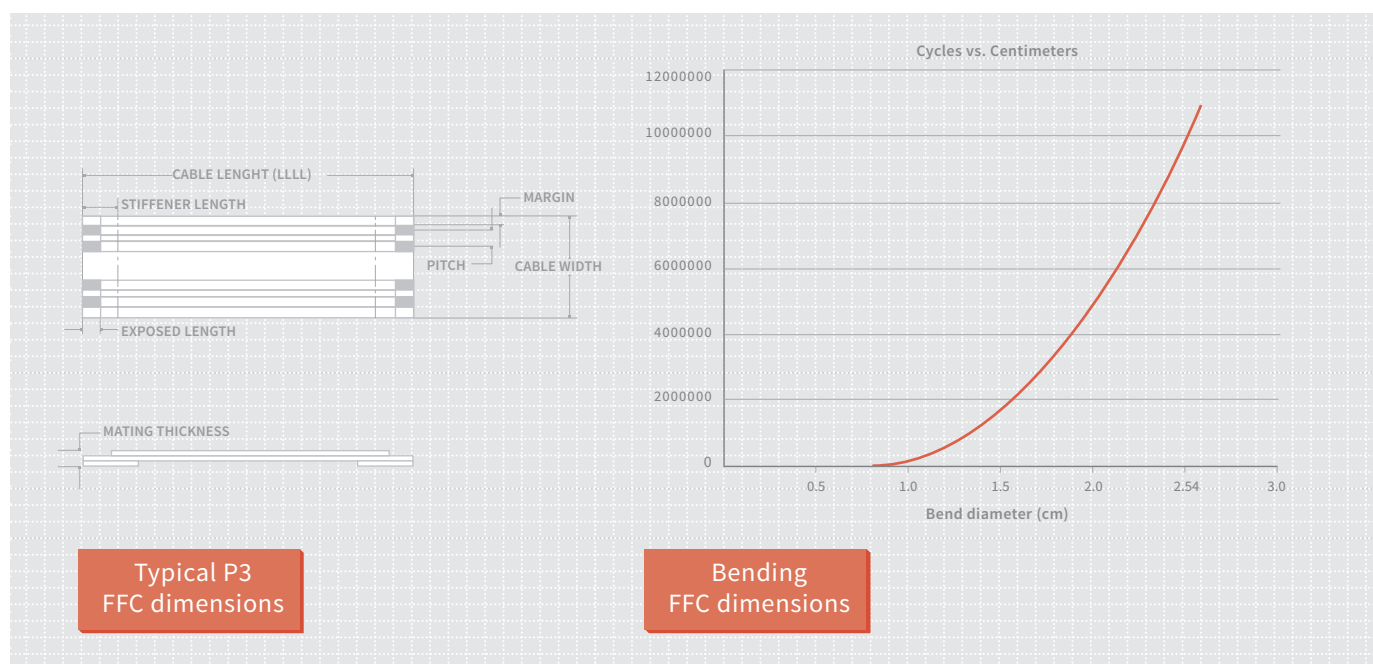
From 0.50 mm pitch for space saving to 2.54 mm, a large variety of pitches is available to suit your needs. In addition to the standard range, we have developed custom designed flat flex cables such as retractable FFCs, gold plated FFCs, FFCs incorporating shields, grounds, bends & creasing, variable pitch, special marking or SMD placements with connections, also available for high speed.

Flat flexible cables are compatible with ZIF and LIF connectors.

Specification

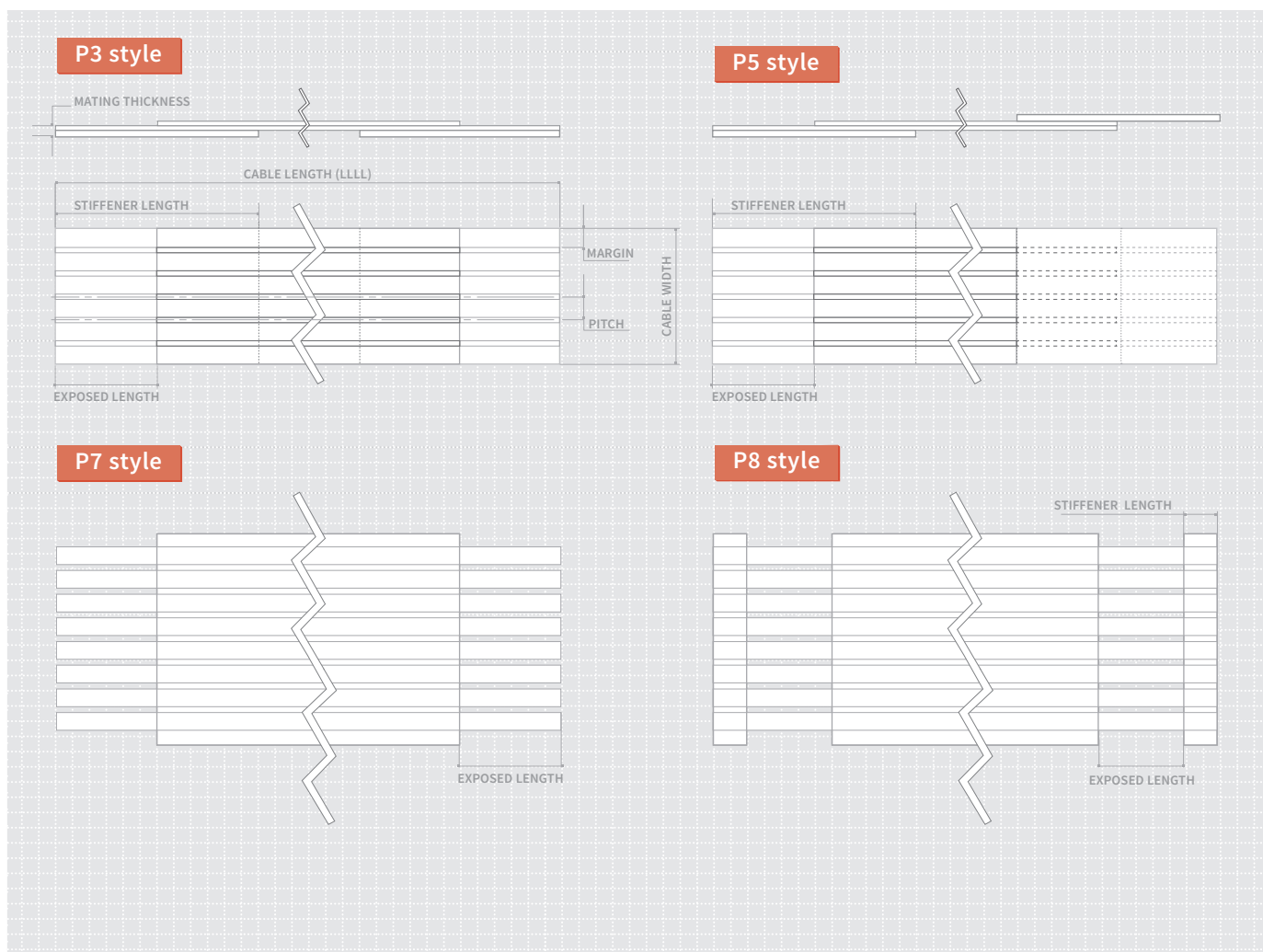
Part Number	050P3NNKLLLL-406406	100P3NNDLLLL-510510	125P3NNCLLLLL-510510	127P3NNCLLLLL-510510	254P3NNALLL-510510
Pitch	0.5 mm	1.00 mm	1.25 mm	1.27 mm	2.54 mm
Cable width	(N+1) 0.50	(N+1)	(N+1) 1.25	(N+1) 1.27	(N+1) 2.54
Cable thickness	0.22	0.25	0.25	0.25	0.25
Conductor width	0.28	0.66	0.8	0.8	1.57
Conductor thickness	0.035	0.076	0.076	0.076	0.076
Exposed length	4	5	5	5	5
Stiffener length	6	10	10	10	10
Mating thickness	0.3	0.3	0.3	0.3	0.3
Margin	0.36	0.66	0.85	0.86	1.68
Conductor material	Tin plated copper	Tin plated copper	Tin plated copper	Tin plated copper	Tin plated copper
Insulation	Polyester	Polyester	Polyester	Polyester	Polyester
High temp. insulation material	Yes: polyimide substrate up to +125°C	Yes: polyimide substrate up to +125°C	Yes: polyimide substrate up to +125°C	Yes: polyimide substrate up to +125°C	Yes: polyimide substrate up to +125°C
Voltage (max.)	90 V	90 V	300 V	300 V	300 V
Temperature	-55°C to +105°C	-55°C to +105°C	-55°C to +105°C	-55°C to +105°C	-55°C to +105°C
UL flame rating	VW-1	VW-1	VW-1	VW-1	VW-1
Dielectric strength	5 000 V	5 000 V	5 000 V	5 000 V	5 000 V
Insulation resistance	5 000 Mega Ohm	5 000 Mega Ohm	5 000 Mega Ohm	5 000 Mega Ohm	5 000 Mega Ohm
RoHs	Yes	Yes	Yes	Yes	Yes
Current rating (max)*	0.5 A	1.2 A	1.4 A	3 A	3 A
Folding	yes	yes	yes	yes	yes
Bending radius	10KK cycles at 25mm	10KK cycles at 25mm	10KK cycles at 25mm	10KK cycles at 25mm	10KK cycles at 25mm

* Value dependant on ZIF/LIF connector performance, ambient temperature, altitude.



All dimensions in cm

Typical standard FFC types



Ordering information

pitch (mm)	0.5	1.00	1.25 / 1.27	2.54
Min. /Max. number of conductors	4 - 100	2 - 100	2 -80	2 - 41

- The maximum cable length with standard part numbering is 9.99 meters.
Please contact your Nicomatic sales representative for pricing on longer lengths.

- 1 to 250 conductors possible upon request

- Packaging: Supplied flat or coiled depending on length, with lot number & date code. Sometimes also supplied banded together or cardboard on edge

- The minimum cable length per pitch is as follows:

pitch (mm)	0.5	1.00	1.25 / 1.27	2.54
Min. Length for Cable Style P3* (mm)	15.00	25.00	25.00	25.00
Min. Length for Cable Style P5* (mm)	15.00	25.00	25.00	25.00

*Shorter lengths may be possible if required, depending on construction. Consult us.

OUR PRODUCTS AND P/N



Standard product range & specific requirements

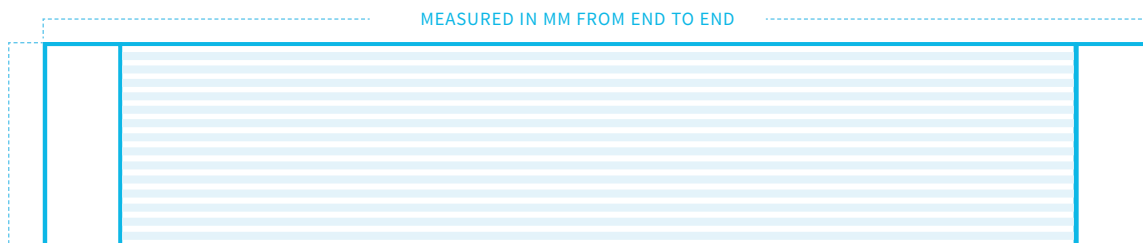
We are a leading manufacturer of a wide variety of standard and custom FFC cables. Nicomatic, an ISO 9001/EN 9100 certified company, has over a decade of experience manufacturing FFC cables. Not only have we served the industry but we have also consistently exceeded customer expectations and industry standards.

Nicomatic provides RoHS compliant FFC cables. Our termination options meet industry standards for LIF and ZIF connections & soldered versions. Our value-added options allow our customers to perfectly fit to their application needs - whether looking for a market standard, or a tailor made solution including gold termination, EMI-RFI protection, higher retention values etc.

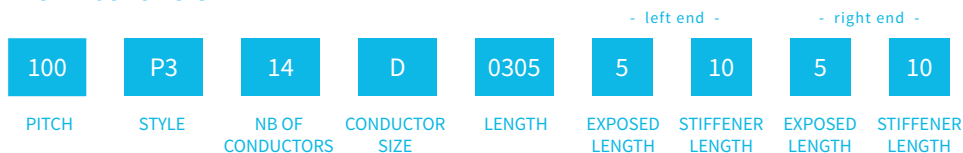


Standard FFC cables

Part numbering system



How to order



GLOSSARY

step 1 **Pitch**

050 - 0.50 mm	125 - 1.25 mm	254 - 2.54 mm
100 - 1.00 mm	127 - 1.27 mm	

step 2 **Style**

step 3 **Number of conductors** (from 02 to 100*)

step 4 **Conductor size (tinned)**

Conductor size (tinned)	Pitch (mm)
K - 0.035 mm x 0.28 mm	0.50
D - 0.076 mm x 0.66 mm	1.00
C - 0.076 mm x 0.80 mm	1.25/1.27
A - 0.076 mm x 1.57 mm	2.54

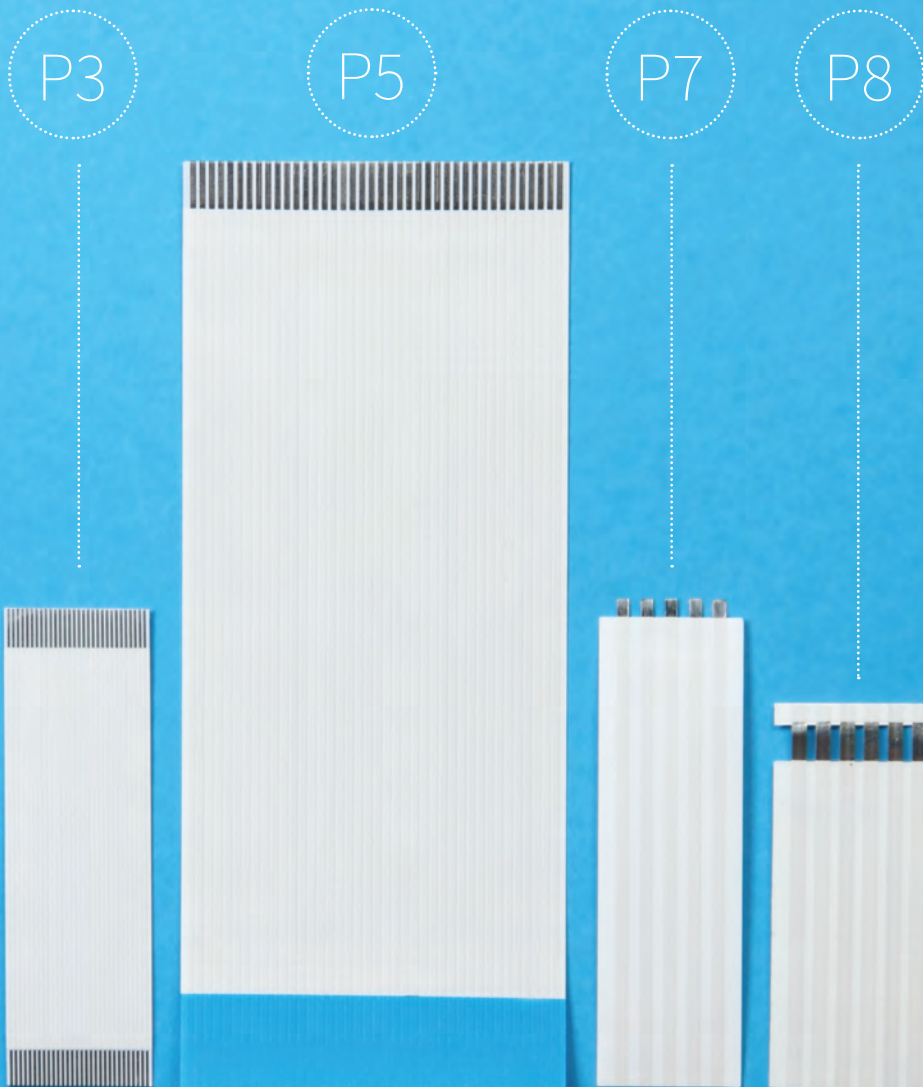
step 5 **Length in mm (measured from end to end)** From 0015 to 9999mm: any above possible upon request

step 6 **Exposed length in mm**

step 7 **Stiffener length in mm**

*view page 13

styles



ADVANTAGES



LONG LIFE EXPECTANCY



HIGH QUALITY MATERIALS

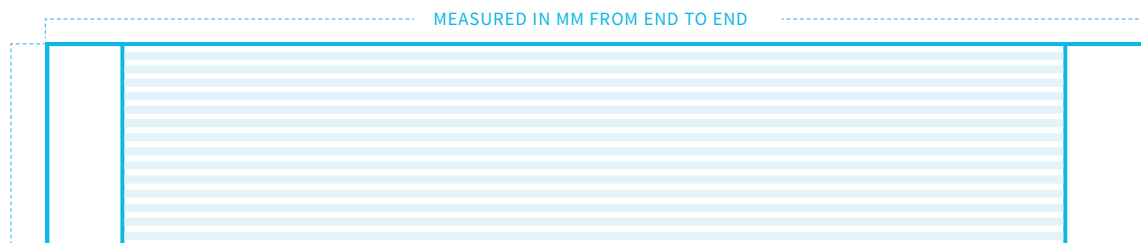


IN-HOUSE MANUFACTURING FOR HIGH REACTIVITY



Gold plated FFC cables

Part numbering system



How to order



GLOSSARY

step 1 Pitch

050 - 0.50 mm	125 - 1.25 mm	254 - 2.54 mm
100 - 1.00 mm	127 - 1.27 mm	

step 2 Style

step 3 Number of conductors (from 02 to 99*)

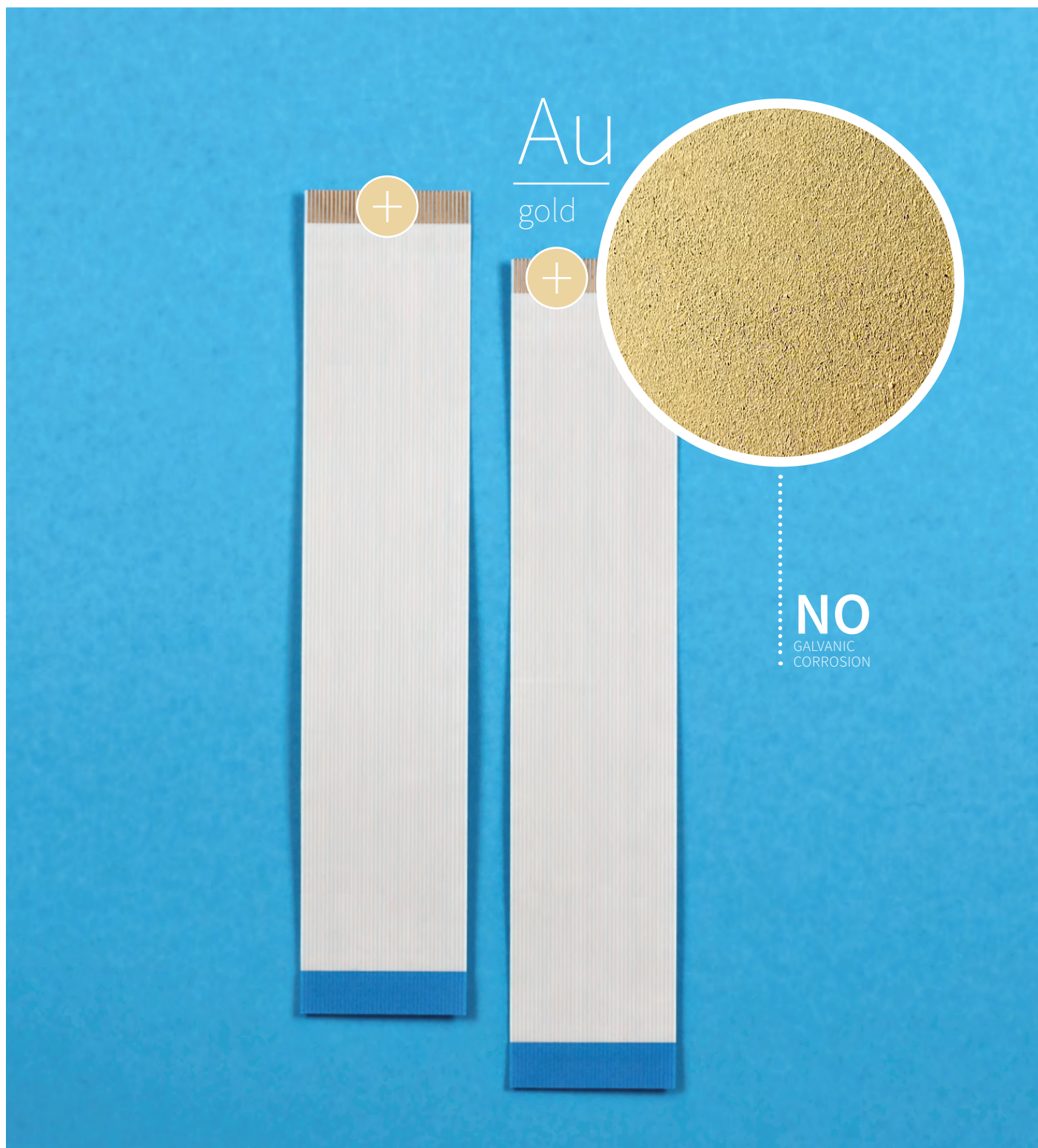
step 4 Conductor size (gold)

Conductor size	Pitch (mm)	Notes
RG - 0.035 mm x 0.28 mm	0.50	Bare copper conductor with 1.0 µm of nickel and 0.10 µm of gold in exposed areas.
HG - 0.076 mm x 0.66 mm	1.0	
GG - 0.076 mm x 0.80 mm	1.25/1.27	
EG - 0.076 mm x 1.57 mm	2.54	

step 5 Length in mm (measured from end to end) From 0015 to 9999 mm: any above possible upon request

step 6
4 - Exposed length in mm
6 - Stiffener length in mm

*view page 13



ADVANTAGES



ZIF/LIF
COMPATIBILITY*



MILLIONS
OF CYCLES



RESISTANCE**

- Whisker free
- Salt spray resistance
- High actuation life even at elevate operating temperatures
- Samples available and short lead time

Table summary

pitch (mm)	0.5	1.00	1.25 / 1.27	2.54
Conductor Width (mm)	0.28	0.66	0.80	1.57
Conductor Thickness (mm)	0.035	0.076	0.076	0.076
Tin Plated Copper Designation	K	D	C	A
Gold Designation	RG	HG	GG	EG

*Nicomatic recommendation: gold to gold connection ensures optimal performance

** High nickel underplated thickness

FFC shielded cables

Part numbering system



How to order



GLOSSARY

step 1 Pitch

050 - 0.50 mm	125 - 1.25 mm	254 - 2.54 mm
100 - 1.00 mm	127 - 1.27 mm	

step 2 Style

step 3 Number of conductors (from 02 to 99*)

step 4 Conductor size (gold)

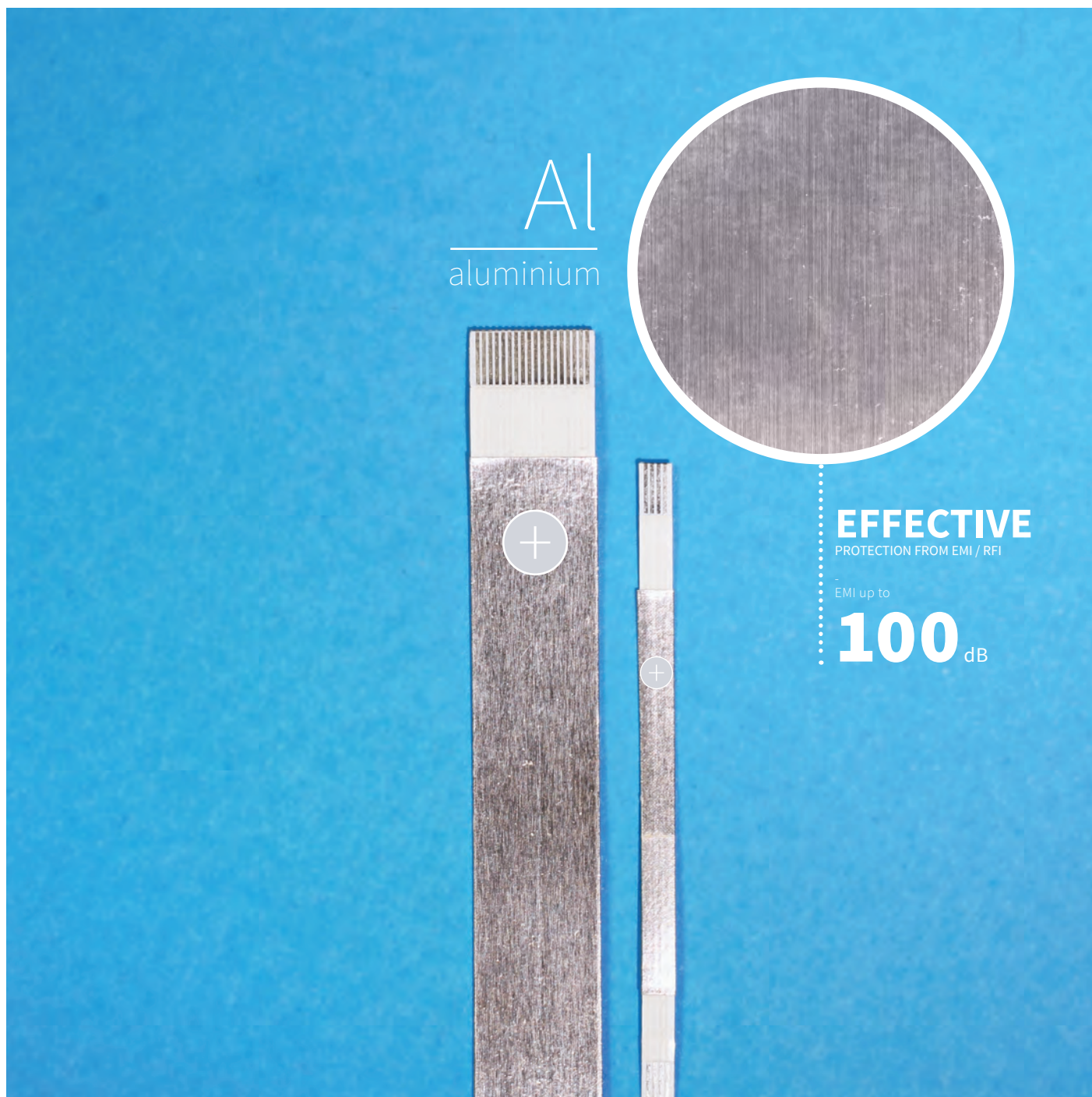
	(Thin)	Pitch (mm)
RG - 0.035 mm x 0.28 mm	K - 0.035 mm x 0.28 mm	0.50
HG - 0.076 mm x 0.66 mm	D - 0.076 mm x 0.66 mm	1.00
GG - 0.076 mm x 0.80 mm	C - 0.076 mm x 0.80 mm	1.25 / 1.27
EG - 0.076 mm x 1.57 mm	A - 0.076 mm x 1.57 mm	2.54

step 5 Length in mm (measured from end to end) From 0015 to 9999: any above possible upon request

step 6 4 - Exposed length in mm
6 - Stiffener length in mm

step 7

EXT external ground	INT internal ground 1: ground to pin 1 and pin NN on one end 2: ground to pin 1 & pin NN on both ends	FLT floating ground
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ADVANTAGES



WIDE RANGE OF CAPABILITY



SAMPLES AVAILABLE



SHORT LEAD TIME

- Various types of grounds given your needs
- Shielding effectiveness (see chart p.22)

3 types of shieldings:

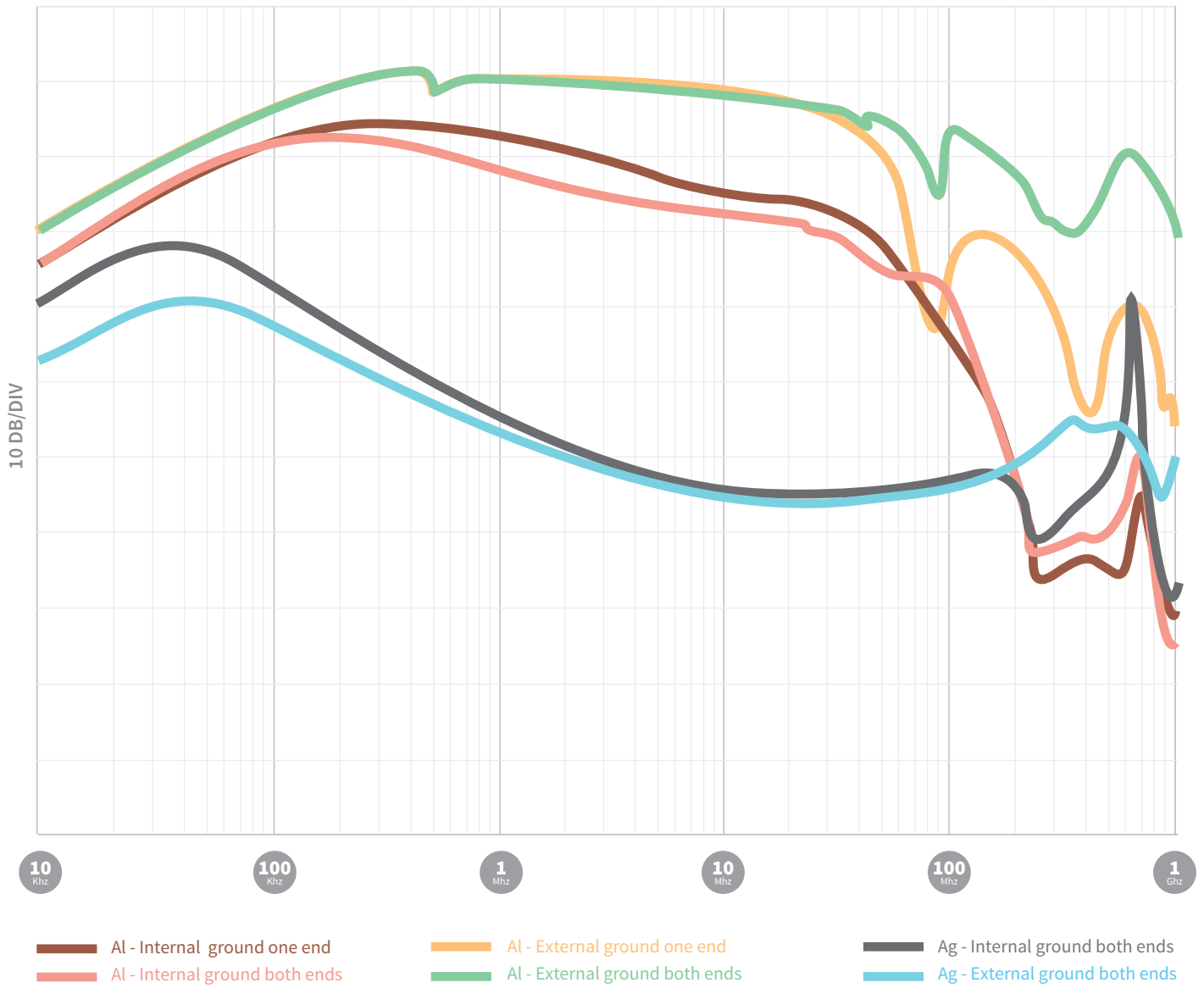
Type of Ground	External	Floating	Internal	Internal
Designation	EXT	FLT	INT1	INT2
Grounding	Ground is located on one end of the cable only	No ground	Ground to first and last conductors on one end only	Ground to first and last conductors on both ends

- Shielding:

Nicomatic shielded cables are shielded by wrapping an insulated aluminum foil on polyester FFC cables

MORE INFO 
NEXT PAGE

Comparative chart of different shielding effectiveness



Type of shielding

Internal ground



ADVANTAGES

- Grounding integrated on the cable
- Good shielding performance* (see chart)
- Internal grounding INT2 recommended for long distance cable to shield

CLEAN
SOLUTION

INT_n

EXAMPLE

050 P3 NN K LLLL - 406 406 - INT1
Ground to pin 1 and pin NN on one end

050 P3 NN K LLLL - 406 406 - INT2
Ground to pin 1 and pin NN on both ends

External ground



ADVANTAGES

- Adding a shielding in an existing design
- Outer shield connection to the PCB
- Good shielding performance*(see chart)

BEST
PERFORMANCE

EXT

EXAMPLE

050 P3 NN K LLLL - 406 406 - EXT
Polyester insulator removed on a 10 mm strip

Floating (no ground)



ADVANTAGES

- Shielding solution without any change in the PCB design

EASY
DESIGN

FLT

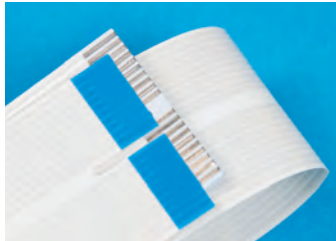
(no ground)

EXAMPLE

050 P3 NN K LLLL - 406 406 - FLT

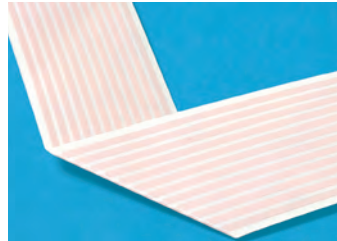
Specific & custom made FFCs

Illustrations and short definitions



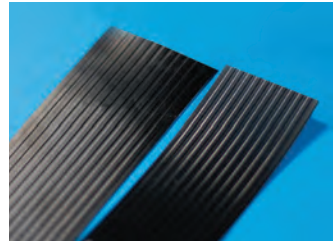
Laser & die cutting

Multi way configuration
Multi connectors cables
Compatible cable ends for mating with Hirose connector ranges



Bends & creasing

Cable ready to be integrated



Black & polyimide materials

High temperature up to 125°C
Discrete integration



Variable pitch

Custom sizes
Low resistance
Good performance

NEED MORE INFO?



Please contact your sales representative or visit us: www.nicomatic.com



Wide copper FFC

High power applications



SMD placements with connections

Variable soldering different component on flat cable:
LED - connectors - ...



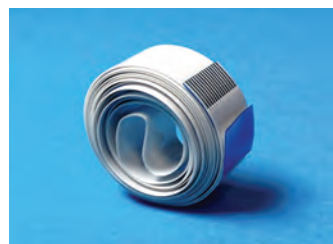
Video cables

Ready to plug connector
Compliance w/ LVDS protocol



RJ45 cables

Quick off the shelf insertion / extraction (standard 1mm pitch)
Available in 6/8 positions



Flexcoil

Compact design
Flexibility in tighter spaces

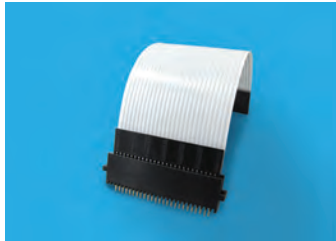


Bulk supply

Reel packaging
Can be cut to your needs
Compatible with Crimpflex™

Related products terminated with crimpflex™

Terminated FFC with Crimpflex™



Jumper cables
1.27 & 2.54mm pitch

For use with extension cables on as board for board interconnection. Exists with more than 15 styles of contacts and 12 styles of housings



Microflex™ Hi-Rel flex harness

High vibration resistant flexible solutions Female-female, solderpin & Octopus versions available



Discrete cable to flat cable connection

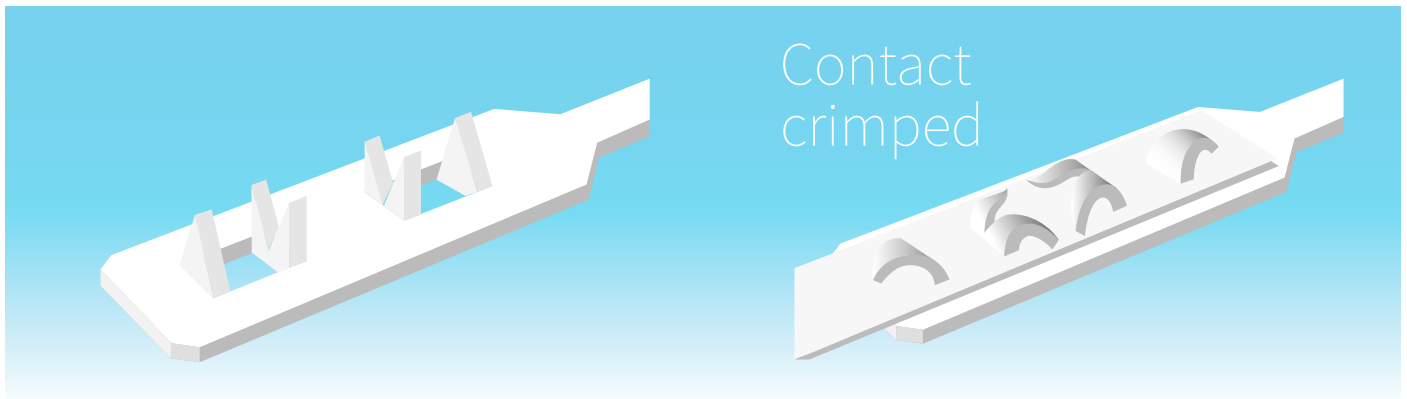
Easy mating from flat to discrete wire at industry standard 2.54 mm pitch. Fully recyclable & RoHS compliant tool available



Butt & staple crimps

Crimp link between two flat flexible supports

Crimpflex™ crimping technology



Crimpflex™ system patented by NICOMATIC

description

Developed and patented by NICOMATIC, the CRIMP FLEX™ connection system complies with the most rigorous electrical and mechanical requirements. The crimping of the contacts is obtained by piercing the conductor in 6 points. This ensures excellent mechanical retention by 2 points and electrical contact by 4 points with the lowest possible contact resistance.

crimping environment

Copper conductors, silver or carbon ink printed conductors, EL lamps. All types of flexible circuits for which thickness ranges from 50µm to 500µm (0.002" to 0.019"). For other thicknesses, please contact NICOMATIC. Can pierce all kinds of supports: polyester, FR4, polyimide, PTFE, etc.

advantages

- Use of contacts in reel at final pitch of 2.54 mm (0.100 ") and 1.27mm (0.050")
- Mass termination of all contacts in one press stroke which saves time and allows more accuracy
- Crimp is easily inspected
- The housing is assembled after crimping
- The width of the circuit is not limited by the width of the housing
- The housing can be removed
- The broadest range of crimp connectors in the industry

Our main product ranges

HIGH PERFORMANCE

Micro-connectors



CMM CONNECTORS



DMM CONNECTORS



MICROFLEX™

FLEXIBLE CIRCUIT

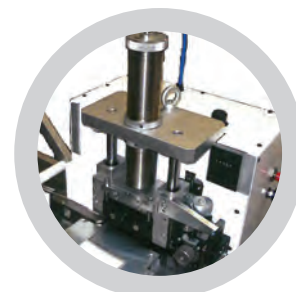
& FFC cables



CRIMPFLEX™ JUMPERS



CRIMPFLEX™ CONTACTS



CRIMPING MACHINES

DOMES & COMPONENTS

for man/machine interface



SWITCH'AIR™
DOMES



DOME
ARRAYS



LEDS FOR
MEMBRANE SWITCHES