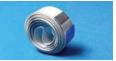




Nicomatic FFC cables are used in board to board interconnections and can be solderded or used with ZIF/LIF



FFC VALUE ADDED OPTIONS

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

OTHER NICOMATIC FLAT CABLE TECHNOLOGIES TERMINATED WITH $\mathbf{CRIMPFLEX^{TM}}$

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



CONTENT

Nicomatic is using the latest digital technology to allow you to access information on our product services.

In a social media-ruled era and in a more and more connected world, we have less time and still must be able to present a concise and clear message in a few seconds. Who we are and what we do the best has to be understood in a glimpse of a second. This, however, does not mean that we have forgotten about more traditional communication means such as paper literature.



Our website:

How can we help you? www.nicomatic.com



Our App':

Available on iOS & android system.

Download it on the Appstore or Android market

Our communication is available in all possible formats whether digital or printed. You will find media ressources, that include regularly updated new interactive functions by using a QR code.





1 - flash it!

2 - consult content







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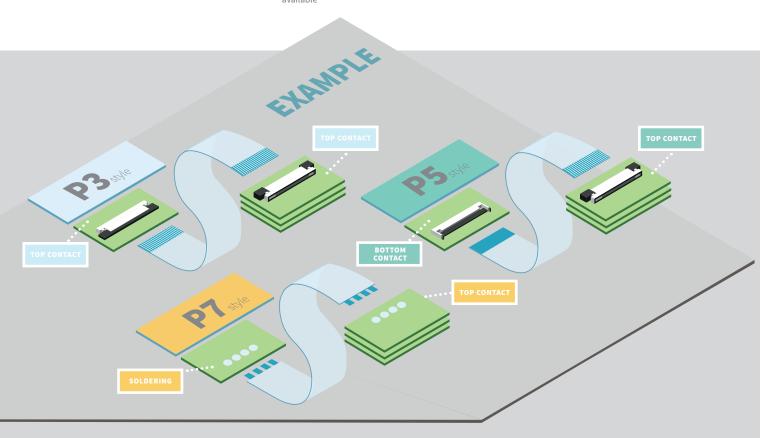
INTRO

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 0030 and 9999 mm, continuous length
- 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



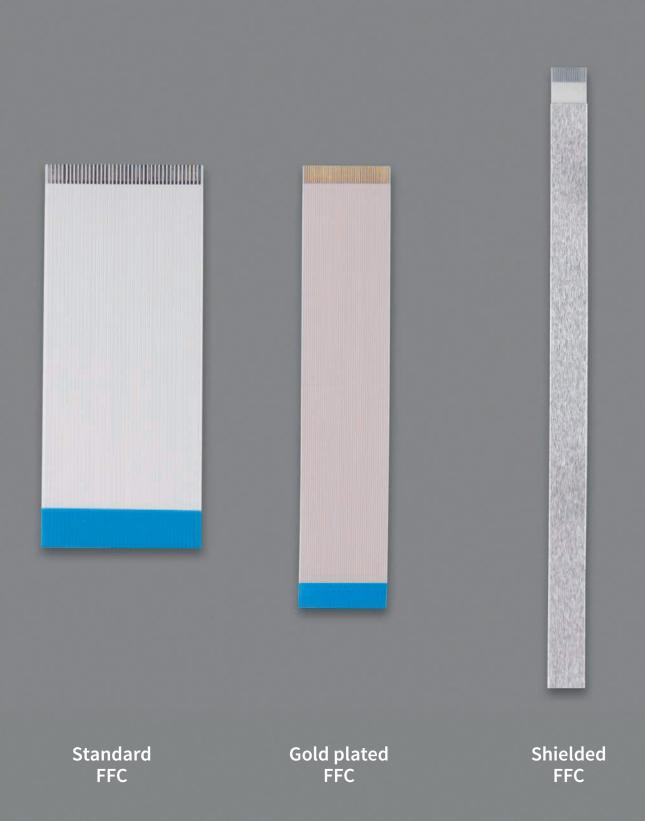
SHORT LEAD TIME



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



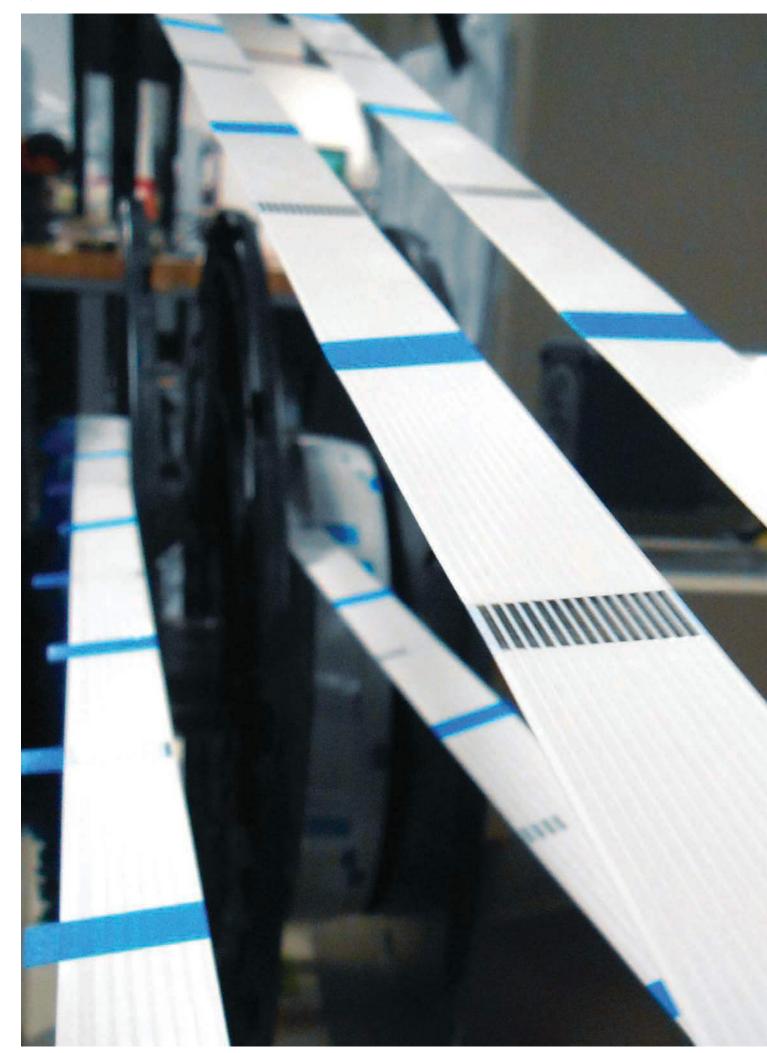
- Pitches from 0.5mm
 to 2.54mm
 UL approved: -55°C to +105°C
 Soldered or used
- No Galvanic corrosion
 Whisker free
 Salt spray resistance
 High performance w/gold connectors

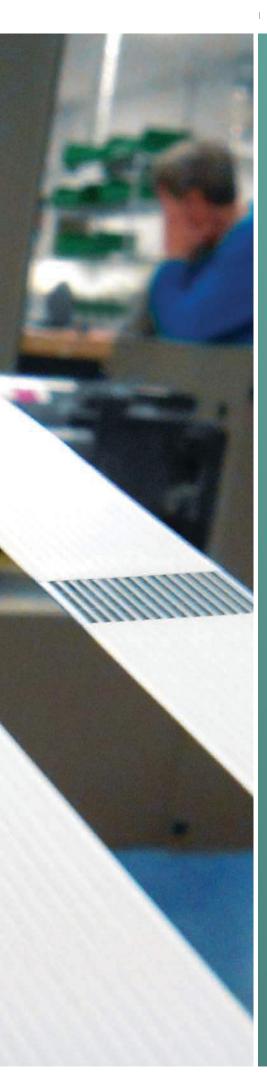
• EMI / RFI protection

OVERVIEW PRODUCT RANGE



06 I FFC CABLE I MANUFACTURING



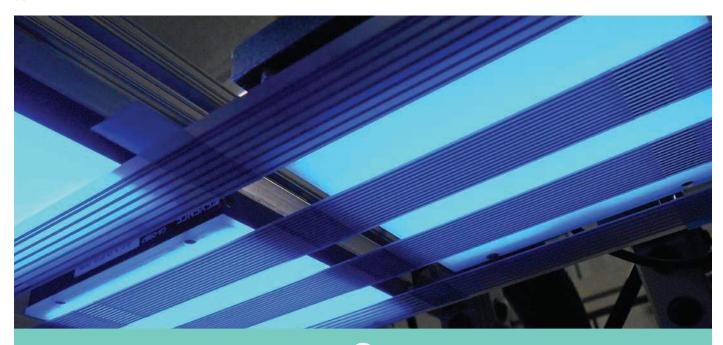


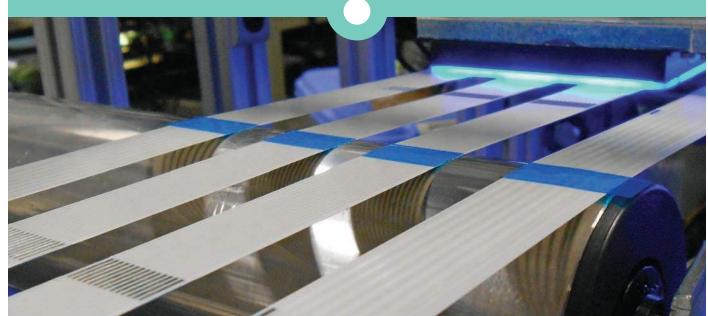
TECHNOLOGY & APPLICATIONS

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.

08 I FFC CABLE I MANUFACTURING





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-arouna times (from two weeks lead time). We offer wide customization choices.

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".



I FFC CABLE I MANUFACTURING 09

Applications



Medical



Industry



Aeronautics IFE



Security



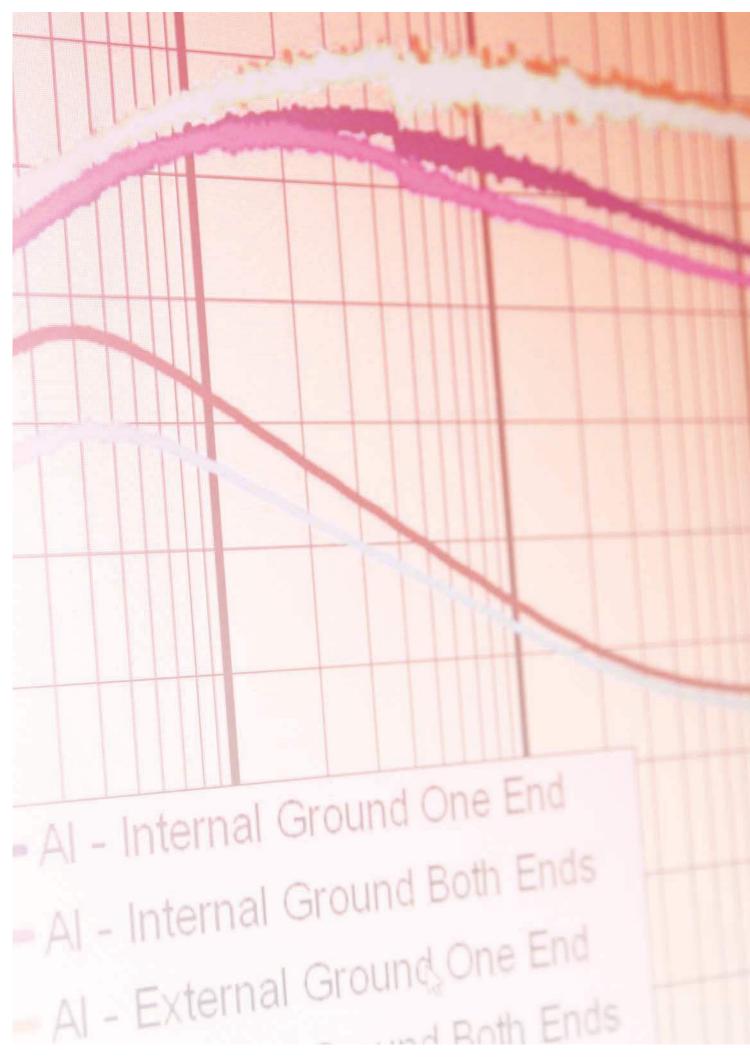
Automotive





Consumer & household electronics

10 I FFC CABLE I TECHNICAL DATA



11



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.

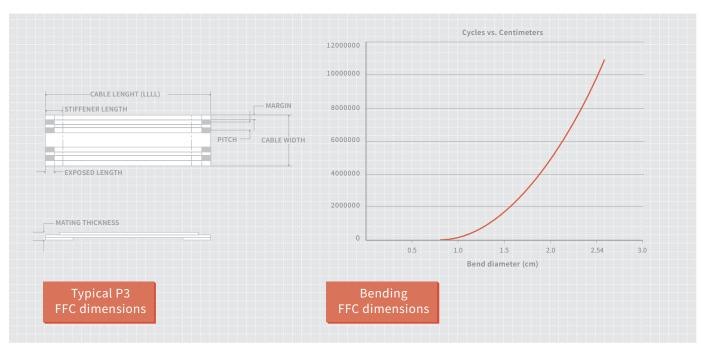
Our FFCs are designed for board-to-board interconnections in a wide variety of electronic systems. Nicomatic Flat Flexible Cables (FFC) are made up of tin plated copper conductors laminated between polyester films with a thermal adhesive for durability.

From 0.50 mm pitch for space saving to 2.54 mm, a large variety of pitches are 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.

Flat flexible cables are compatible with ZIF and LIF connectors.

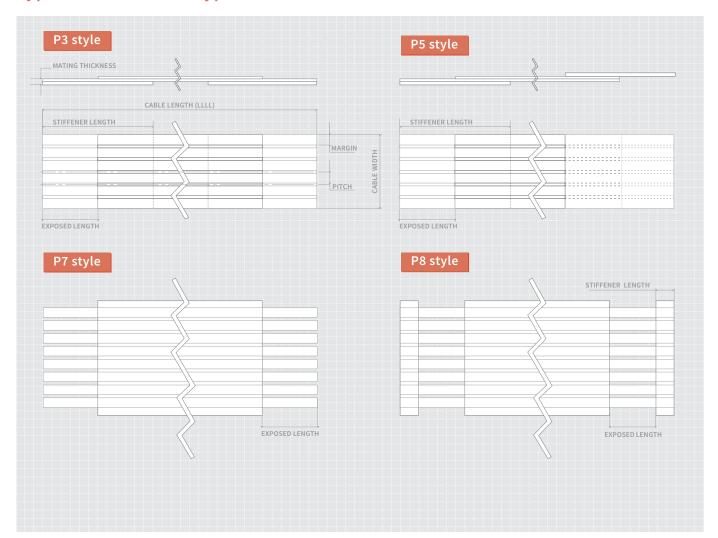
Specification

Part Number	050P3NNKLLLL-406406	100P3NNDLLLL-510510	125P3NNCLLLL-510510	127P3NNCLLLL-510510	254P3NNALLLL-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	0.66	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				
Insulation	Polyester	Polyester	Polyester	Polyester	Polyester
High temp. insulation material	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				
UL flame rating	VW-1	VW-1	VW-1	VW-1	VW-1
Dielectric strength	5 000 V				
Insulation resistance	5 000 Mega Ohm				
RoHs	Yes	Yes	Yes	Yes	Yes
Folding	yes	yes	yes	yes	yes
Bending diameter	10KK cycles at 25mm				



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

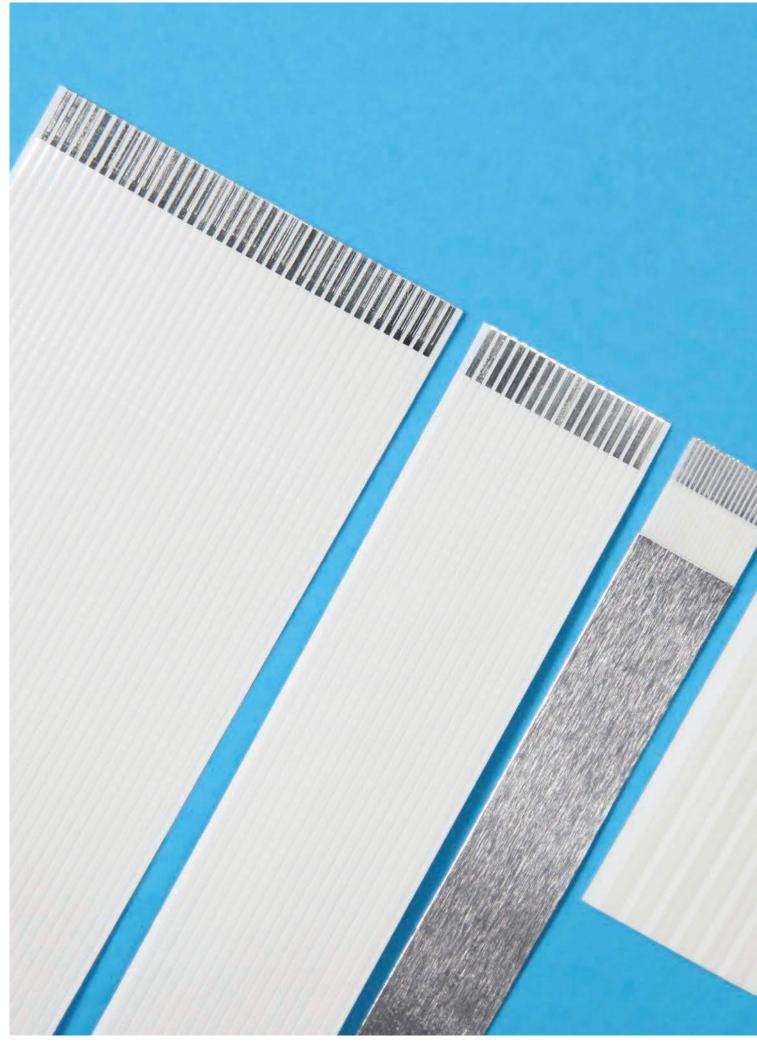
- The maximum cable length with standard part numbering is 9.99 meters. Please contact your Nicomatic sales representative for pricing on longer lengths.
- Packaging: Supplied flat or coiled depending on length, with lot number & date code. Sometimes also supplied banded together or cardboard on edge

- 1 to 250 conductors possible upon request

- 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)	30.00	30.00	30.00	30.00	
Min. Length for Cable Style P5* (mm)	30.00	30.00	30.00	30.00	

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





OUR PRODUCTS AND P/N

Standard product

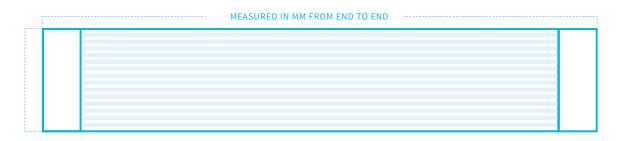
range & specific requirements

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



step **1** Pitch - 0.50 mm - 1.25 mm - 2.54 mm - 1.00 mm - 1.27 mm



step Number of conductors (from 02 to 100*)

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

Length in mm (measured from end to end) From 0030 to 9999mm: any above possible upon request

step 6 **Exposed length in mm**

step Stiffener length in mm

step **4**

step **5**

I FFC CABLE I OUR PRODUCTS & P/N = 17

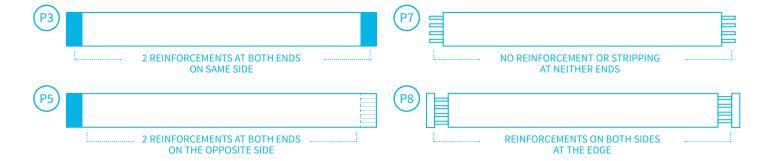


ADVANTAGES



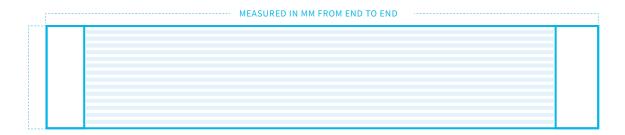






Gold plated FFC cables

Part numbering system



How to order





Pitch - 0.50 mm - 1.25 mm - 2.54 mm - 1.00 mm - 1.27 mm

step 2

Style



Number of conductors (from 02 to 99*)



Conductor size (gold)

RG - 0.035 mm x 0.28 mm 0.50 **HG** - 0.076 mm x 0.66 mm 1.00 / 1.27 **GG** - 0.076 mm x 0.80 mm 1.25 / 1.27 **EG** - 0.076 mm x 1.57 mm

Bare copper conductor with 1.0 µm of nickel and 0.10 µm of gold in exposed areas.



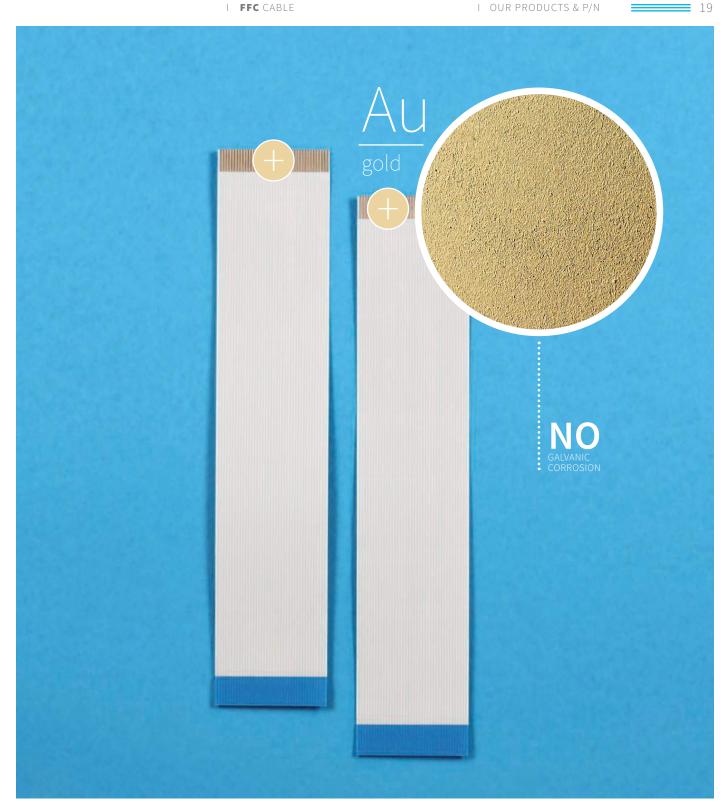
Length in mm (measured from end to end)

From 0030 to 9999 mm: any above possible upon request



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

*view page 13



ADVANTAGES



ZIF/LIF COMPATIBILITY*



MILLIONS OF CYCLES



• 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	С	A
Gold Designation	RG	HG	GG	EG

FFC shielded cables

Part numbering system



How to order







CONDUCTORS



















Pitch

050 - 0.50 mm **125** - 1.25 mm **100** - 1.00 mm

254 - 2.54 mm

127 - 1.27 mm













Number of conductors (from 02 to 99*)



Conductor size (gold)

GG - 0.076 mm x 0.80 mm

EG - 0.076 mm x 1.57 mm

Conductor size (tinned) RG - 0.035 mm x 0.28 mm **K** - 0.035 mm x 0.28 mm

HG - 0.076 mm x 0.66 mm **D** - 0.076 mm x 0.66 mm **C** - 0.076 mm x 0.80 mm **A** - 0.076 mm x 1.57 mm

1.00 / 1.27 1.25 / 1.27

2.54

step **5**

Length in mm (measured from end to end)

From 0030 to 9999: any above possible upon request



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



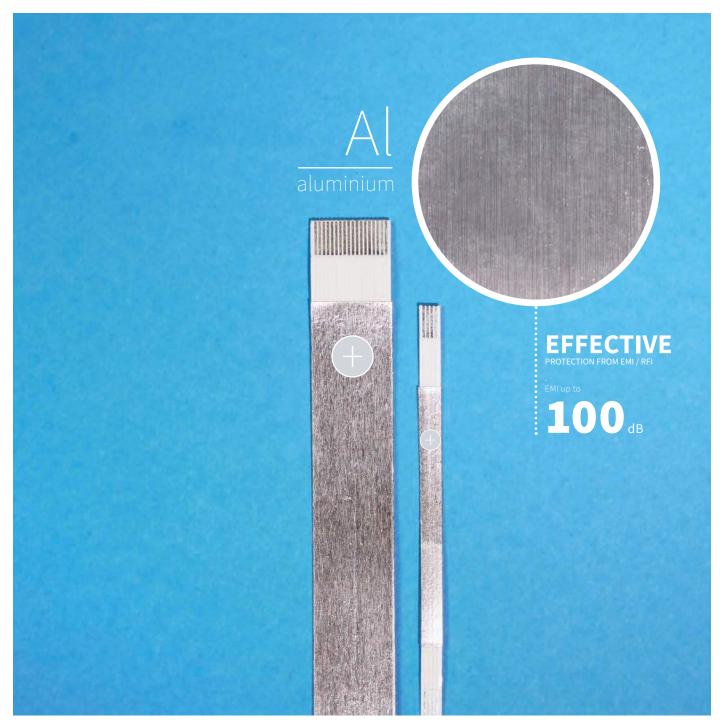
EXT external ground

INT internal ground

INT 1: ground to pin 1 and pin NN on one end

INT 2: ground to pin 1 & pin NN on both ends

I FFC CABLE I OUR PRODUCTS & P/N



ADVANTAGES



WIDE RANGE OF CAPABILITY



AVAILABL



LEAD TIM

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

Multiple types of shieldings:

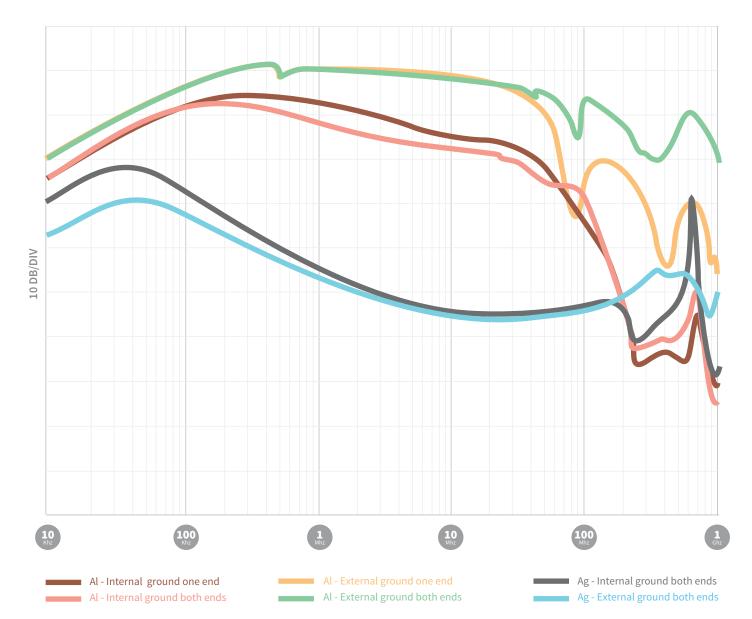
Type of Ground	External	Internal	Internal
Designation	EXT	INT1	INT2
Grounding	Ground is located on one end of the cable only	Ground to first and last conductors on one end only	Ground to first and last conductors on both ends

Shielding

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



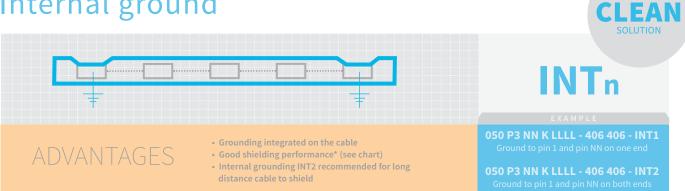
21

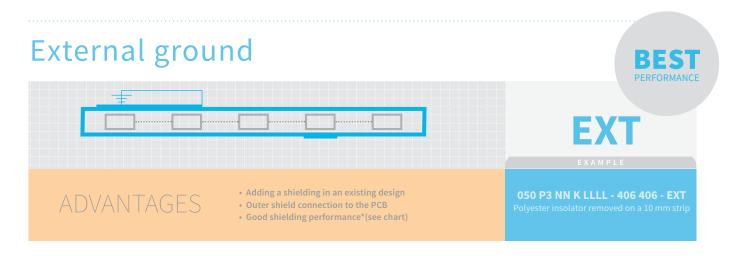


I FFC CABLE I OUR PRODUCTS & P/N

Type of shielding

Internal ground





Retention Tabs for FFC

Nicomatic has a high retention solution for your specific requirement

Mating with hirose™ FH28, FH40 and FH41 connector systems

These connectors feature a robust locking mechanism and accomodate "side-catchers" on the FFC, up to 2.5 times better retention versus the traditional ZIF/LIF connectors. Typical applications include: LCD and board-to-board applications in medical devices/machines, test and measurement equipment, industrial equipment, consumer electronics and other devices that need a small, rugged and reliable solution.

Nicomatic's solution is a fine-pitch 0.50 mm FFC, in either our P3 or P5 styles, enabling space-efficient wiring inside equipment.

The FCC can be bent/creased, this flexibility delivers easier wiring inside equipment.

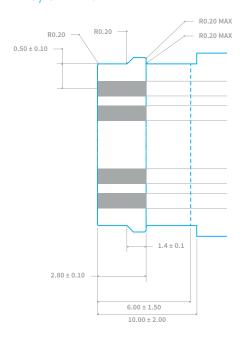
Our Retention Tab line is available for the nonshielded Hirose™ FH28 & FH40 connector series as well as their shielded FH41 & FH48 connector series. Drawn below all the two FCC layouts Hirose™ recommends; one for their FH28 & FH40 connectors



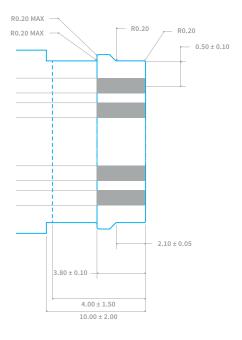
and another layout for their FH41 & FH48 series. In-order to differentiate the four connectors; both the Hirose™ FH28 & FH41 are horizontal connectors and both the Hirose™ FH40 & FH48 are vertical connectors. If mating with either the FH41 or FH48 Hirose™ shielded connectors, keep in mind to account for ground contacts, both series are equipped with ground plating. The number of ground contacts will vary depending on the overall number of contacts.

Technical Drawings

STD28/STD40



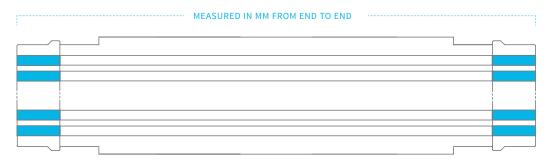
STD41/STD48



I FFC CABLE I OUR PRODUCTS & P/N

Retention Tabs for FFC

Part Numbering System



How to order



Pitch

050 - 0.50 mm

Nicomatic can offer any pitch, these numbers correspond to Hirose™ FH Connector Series

Style

P3

P5



Number of conductors (STD28 from 10 to 80, STD40 from 10 to 80 or STD41 from 28 to 68)

Nicomatic can offer any number of conductors, please refer to your Hirose™ FH Connector series Data Sheet for their most current offering



Conductor size (tin) K - 0.035 mm x 0.28 mm **Conductor size** (gold) **RG** - 0.035 mm x 0.28 mm Bare copper conductor with 1.0 µm of nickel and 0.10 µm of gold in exposed areas.



Length in mm (measured from end to end)

From 0030 to 9999mm: any above possible upon request



Tab Style

Non-shielded Cable Options:

STD28: Mates with Hirose™ FH28

STD40: Mates with Hirose[™] FH40

STD41: Mates with Shielded Hirose™ FH41

STD48: Mates with Shielded Hirose™ FH48

External Shielded Cable Options:

SHD28: Mates with Hirose[™] FH28

SHD40: Mates with Hirose™ FH40

SHD41: Mates with Shielded Hirose™ FH41

SHD48: Mates with Shielded Hirose[™] FH48

Internal Shielded Cable Options:

SHD28INT1: Mates with Hirose[™] FH28

SHD28INT2: Mates with Hirose[™] FH28

SHD40INT1: Mates with HiroseTM FH40

SHD40INT2: Mates with Hirose[™] FH40

SHD41INT1: Mates with Shielded Hirose[™] FH41 SHD41INT2: Mates with Shielded Hirose™ FH41 **SHD48INT1:** Mates with Shielded Hirose[™] FH48

SHD48INT2: Mates with Shielded Hirose™ FH48

If mating with the Hirose™ FH28 or FH40 we recommend shielding with external grounding if space is available

INT internal ground

INT 1: ground to pin 1 and pin NN on one end INT 2: ground to pin 1 & pin NN on both ends

Specific & custom made FFCs

Illustrations and short definitions



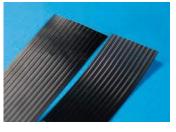
Laser & die cutting

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 temparature up to 125°C Discrete integration



Variable pitch

Custom sizes Low resistance Good performance



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) Availaible 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



 $\mathsf{Crimpflex}^{\mathsf{TM}}\,\mathsf{system}\,\mathsf{patented}\,\,\mathsf{by}\,\mathsf{NICOMATIC}$

description

Developed and patented by NICOMATIC, the CRIMPFLEX™ 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 $% \left(x_{i}^{\prime }\right) =x_{i}^{\prime }$

Our main product ranges



Micro-connectors



CMM CONNECTORS



DMM CONNECTORS



MICROFLEX™



& FFC cables



CRIMPFLEX™ JUMPERS



CRIMPFLEX™ CONTACTS



CRIMPING MACHINES



for man/machine interface



SWITCH'AIR™ DOMES



DOME ARRAYS



LEDS FOR MEMBRANE SWITCHES

I FFC CABLE CORPORATE



Nicomatic is an innovative company with



HARSH ENVIRONMENT



STRONG



CUSTOMER SATISFACTION

Why make NICOMATIC your key partner?

Short lead time & outstanding product quality maximize customer satisfaction. Nicomatic has a range of services designed to provide:



TIME SAVING



RESPONSIVENESS



RELIABLE ANSWER

Sales & Online Services

Support Services

• Technic

Fast & reliable technical support - all standard product ranges answer under 24 hours. Technical FAQ also available online.

Custom solution

Specific product design - reply in under 5 days, technical & sales support for all your custom designs: feasibility study, quote, drawing, engineer to engineer direct contact...

Quality

Dedicated quality service – set up to direct all quality requests, e.g. Material certificates, plating, conformity, customer claims...

30 | I FFC CABLE | CORPORATE

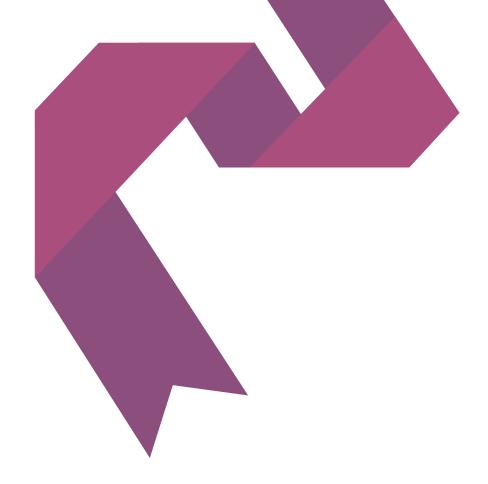
Notes

I FFC CABLE I CORPORATE 31

Date of issue: November 2017 Catalogue reference: C.FFC.500/GB

NICOMATIC maintains a policy of ongoing development and improvement. It therefore reserves the right to change design, dimensions and specifications without notice. All information stated inside this catalogue is not contractual and subject to change (eg. standard connector configurations).

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CAREER

COME & JOIN US

- Improving technology
 Diversity & gender equality
 We promote initiative & responsibility

READY TO JOIN OUR TEAM?

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