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Brochure

# Fischer cables (2024)

Twisted-pair cable for cryostats

AIVON OY

# Fischer cables

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© Aivon Oy  
Valimotie 13A  
00380 Helsinki, Finland  
[www.aivon.fi](http://www.aivon.fi)

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# Fischer cables

## Twisted-pair cable for cryostats

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**A**ivon Fischer cables are multipole twisted-pair cables for connecting measurement equipment to cryostats 24-pin circular Fischer connector.

Fischer cables have customer-specified length and three shielding options and optional ferrite beads are offered. By default, both ends of the cable have Fischer S105A093-80+ connectors. One end of the Fischer cable can have also other connector depending on customer's equipment. Subminiature D25 (female or male) is common due to its good availability and low cost. It is also possible to have the other end unconnectorized making it possible for the customer to add own installations directly at the end of the cable.

Typically there is a breakout box at the other end of the cable to distribute different lines to single pole connectors such as BNC or few pole connectors such as LEMO 2-pin. In such a breakout box, there needs to be a female Fischer connector to mate with the Fischer cable. We offer such a mating connector with short wires (Fiscger pigtail) for easy integration to customer's own setup.

### Cable and shielding options

Aivon Fischer cables can be manufactured with three different cable/shielding options:

Option	Description
1) Single common shield	Twisted pairs (12 x 2 x 0.14 mm <sup>2</sup> ) inside one common metallic braided shield, PVC outer insulation. Shield connected to Fischer connector body at both ends.
2) Individual pair shields	Twisted pairs (12 x 2 x 0.25 mm <sup>2</sup> ) inside own aluminized foil shields and drain wire, PVC outer insulation. Shields connected to Fischer connector body at both ends.
3) Individual pair shields, common	Twisted pairs (12 x 2 x 0.25 mm <sup>2</sup> ) inside own aluminized foil shields and drain wire, PVC outer

shield and outer nylon shield	insulation. Shields connected to Fischer connector body at both ends. Separate braided metallic shield around the PVC outer shield clamped on top of Fischer connector body. Nylon braided shield around the metallic shield.
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Figure 1: Fischer cables with option 2: individual pair shields (gray) and option 3: all possible shields (black)..

## Product selection table

Product code depending on connector and shielding options

Product code	Fischer S105A093-80+ at both ends	Fischer S105A093-80+ and subminiature D25 female or male	Fischer S105A093-80+ and free end
Single common shield	400101	400401	400601
Individual pair shields	400201	400501	400701
Individual pair shields, common shield and outer nylon shield	400301	-	-

## Length, pinout and customization options

Length of the cable is specified by the customer. We make the length within +/- 5 cm from customer spec.

In Fischer-Fischer cables the pins are mapped as 1 - 1, 2 - 2, ..., 24 - 24, where the number is according to Fischer pin numbering convention. The twisted pairs are formed between the pins 1 - 2, 3 - 4, 5 - 6, ..., 23 - 24.

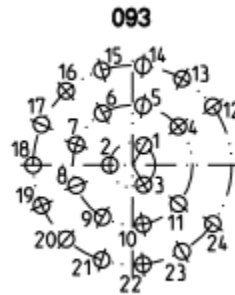


Figure 2: Fischer S105A093 pin numbering from behind.

In Fischer – Dsub cables the pinout has to be agreed with the customer. A separate pinout document is released to clarify the pinout before cable manufacture. An example of such a document is in Figure 3.

Fischer-Dsub25 cable pinout table

Fischer S105A093-80+ cable connector	Cable			Dsub25, male
1	wire1		wire1	1
2	wire2	Pair 1	wire2	14
3	wire1		wire1	2
4	wire2	Pair 2	wire2	15
5	wire1		wire1	3
6	wire2	Pair 3	wire2	16
7	wire1		wire1	4
8	wire2	Pair 4	wire2	17
9	wire1		wire1	5
10	wire2	Pair 5	wire2	18
11	wire1		wire1	6
12	wire2	Pair 6	wire2	19
13	wire1		wire1	7
14	wire2	Pair 7	wire2	20
15	wire1		wire1	8
16	wire2	Pair 8	wire2	21
17	wire1		wire1	9
18	wire2	Pair 9	wire2	22
19	wire1		wire1	10
20	wire2	Pair 10	wire2	23
21	wire1		wire1	11
22	wire2	Pair 11	wire2	24
23	wire1		wire1	12
24	wire2	Pair 12	wire2	25
			NC	13

Figure 3: Example pinout for Fischer - Dsub cable

The following custom options are available for Fischer cables:

- Addition of ferrite beads around the cable. Ask us about different options.
- Cutting of shield near one connector
- Custom connectors at one or both ends

## Fischer pigtail

Aivon Fischer pigtail is a female Fischer panel connector DG105A093-80 equipped with ~ 30 cm long twisted pairs. This connector mates with Aivon Fischer cables and it can be installed to customer's own breakout boxes or other "home-made" instrument.



Figure 4: Fischer pigtail

## Document revision history

Date	Version	Description	Author
24.9.2024	1.0	Initial draft	JSP