SPINNER
Flexibly Configure Your Jumpers

SpinnerFlex® Jumpers

Top Quality, Top Performance – Every Time

LOW PIM

HIGH FREQUENCY PERFORMANCE WORLDWIDE
www.spinner-group.com

SPINNER

Well Connected

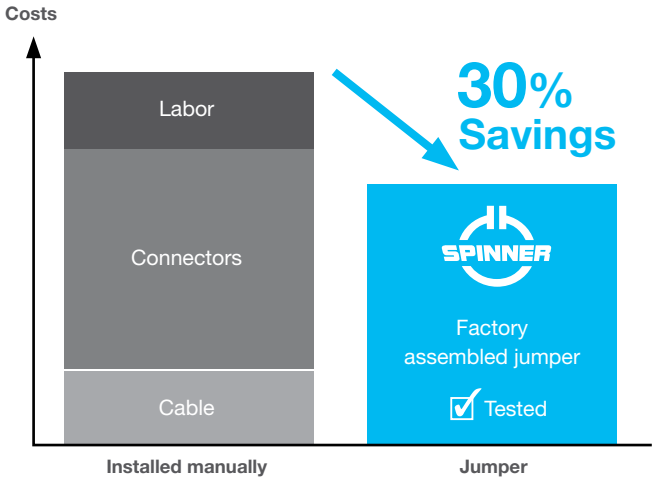
New frequency bands are becoming available for mobile communications almost yearly. Robust transmission capabilities are essential for making the most of capital expenditures for sites while minimizing the risk of reduced system performance and downtimes despite rapid growth in frequencies and data volumes.

Jumper, the Better Connection

It's a fact that jumpers are superior to manually assembled cables: they boast better electrical performance and reliability, in addition to costing less at the end of the day.

The big advantage of jumpers is that they are assembled in monitored, automated processes. The connectors are soldered onto the cable, resulting in better electrical and mechanical properties. For added security, they are electrically tested before leaving the factory.

Jumpers also save money. Manual assembly of cables calls for tools, apart from the time spent cutting them, mounting the connectors at both ends, and electrically testing the result. This adds substantially to the already-high cost of materials.



SpinnerFlex®, the Better Jumper

SPINNER has many years of experience in manufacturing topnotch jumpers. We invented automated soldering for them, becoming the first vendor to completely move beyond manual assembly. And our fourth-generation production lines have now raised the bar for quality, flexibility and lead time even higher.

SpinnerFlex® jumpers ensure flawless, highly cost-effective connections between base stations and antennas. Our high standards of quality in design, material and manufacture ensure optimal connectivity, easy installation and failure-free operation under even the harshest environmental conditions. The benefits are obvious: lower cost of ownership, diminished operating expenses and greater returns on investments.

All SpinnerFlex® jumpers feature hermetic IP68 ingress protection – i.e. they are completely dust-tight and able to withstand sustained immersion in water – and are produced in an environmentally responsible manner in accordance with ISO 14001.

Benchmark Flexibility and Lead Times

Increasingly, it is unavoidable to implement mobile, on-site and in-building installations with minimal lead times. This calls for fast customer-specific solutions that installers can order and receive at short notice, ideally in a matter of days.

Over the last decade, SPINNER has supplied over 10 million jumpers of more than 7000 different types. We offer a wide variety of cable types and lengths and connector constellations, which our customers can flexibly specify when ordering.

Thanks to state-of-the-art production technologies and constantly improved processes, SPINNER is able to quickly and reliably assemble the products you want and need. We manufacture SpinnerFlex® jumpers in Germany and ship them to wherever they are required in just a few days.

The bottom line is that our customers not only get the best possible electrical performance with a failure rate of close to zero, but also save money. In today's cost-driven installation business, it's a huge advantage to be able to use customized jumpers on-site. It eliminates the risks of assembling connectors by hand while saving time and the cost of purchasing required tools. In terms of value for money, in fact, no solution surpasses SpinnerFlex® jumpers.

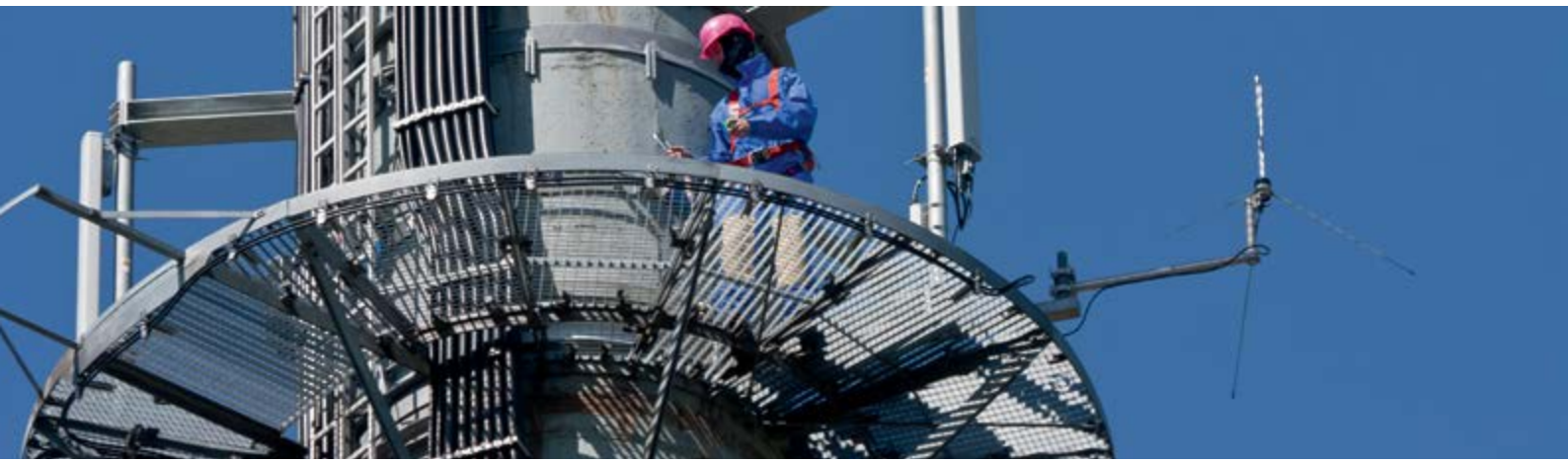
SpinnerFlex® = Jumper + Adapter

During the first phase following the introduction of 4.3-10, 85% of jumpers based on this standard were used as adapters and therefore provided with a different connector system at the opposite end – and that is only one example. With the wide variety of connector types in use these days, SpinnerFlex® jumpers are a less expensive alternative while also ensuring better connections.

To facilitate customized configurations, SPINNER has introduced sales article numbers for SpinnerFlex® jumpers (see page 7 for more information).

Try them out – the possibilities are endless!

There are Three Different Types of SpinnerFlex® Jumpers



SpinnerFlex® TopFit: the Classic Jumper

Classic SpinnerFlex® jumpers typically consist of a cable with a connector at each end. You can choose from the following options:

Cable types:
SF 1/2", SF 3/8", SF 1/4" and LF 1/2" in any desired length with your choice of the following jackets:
PE, flame-retardant, gray and compliant with the European Construction Products Regulation (CPR)

Connectors:
Any combination of 7-16, 4.3-10, N, 2.2-5 and NEX10® with your choice of the following styles:
Straight, angled or for installation in housings

Jumpers can also be optionally ordered with only one connector (pigtail configuration) so they can be shortened to the right length at the installation site before manually attaching the second connector (also available as kits).

For configuration details, please see the table of sales article numbers on page 7.

SpinnerFlex® MultiFit Jumper with LF 7/8" Feeder Clamp

SpinnerFlex® MultiFit jumpers consist of an SF 1/2" cable of any length with one of the above-mentioned connectors at one end and an LF 7/8" cable clamp at the other.

This lets them be directly connected to a feeder line. The advantages of this are obvious: you save one connector and the associated installation time.

SpinnerFlex® MultiFit jumpers are compatible with all commercially available LF 7/8" feeder cables.

For configuration details, please visit www.spinner-group.com/san

SpinnerFlex® Hybrid Jumper with Integrated Feeder Line

SpinnerFlex® Hybrid jumpers are assembled to combine the low losses of a LF 7/8" feeder cable with the flexibility and easy handling of a SF 1/2" jumper. The 100% factory-assembled and -tested cables eliminate any chance of installation errors while minimizing installation times.

SpinnerFlex Hybrid® jumpers typically have a one-meter-long SF 1/2" cable at each end, assembled with any desired connectors. Other lengths can also be specified, however.

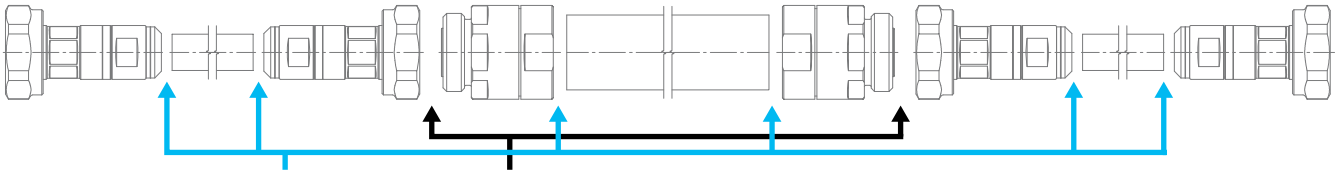
For configuration details, please visit www.spinner-group.com/san

Save Costs and Minimize Risks

Every connector installed on-site costs money and is riskier than factory-assembled jumpers. Manual installation is associated with a host of hazards, including soiling, moisture, insulation fragments caused by improper stripping, or a slight angle between the outer cable conductor and clamp. All of this can negatively impact transmission and significantly diminish the capacity of a line or even an entire site.

Besides increased risks and greater expenditures for connectors, installation times are another major cost factor. The following diagram compares a completely manual installation with our three jumper types.

Entire RF Transmission Line Installed by Hand

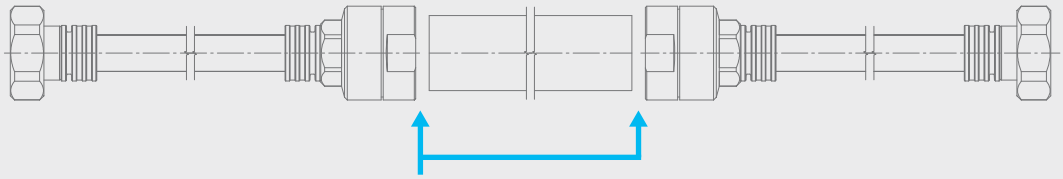


Fully manual installation: **6 cable clamps** and **2 plug-socket connections**

SpinnerFlex® TopFit Jumper

Factory-assembled SpinnerFlex® TopFit jumpers: **2 cable clamps** and **2 plug-socket connections**

SpinnerFlex® MultiFit Jumper



Factory-assembled SpinnerFlex® MultiFit jumpers: **2 cable clamps**

SpinnerFlex® Hybrid Jumper

Use of a completely factory-assembled SpinnerFlex® Hybrid jumper

SpinnerFlex® Jumpers Go CPR

To reduce fire hazards, in mid-2017 the EU's Construction Products Regulation (CPR) was extended to communications cables. Now only CPR-compliant, fire-resistant cables may be installed in new buildings.

The regulation currently only applies to unterminated cables that are provided with connectors at the construction site. SPINNER, however, has already gone a step further by starting to supply not only CPR-certified coaxial cables, but also suitable jumpers for them. It is our conviction that this is vital for improving the safety of people who use buildings.

The advantage of jumpers is that they are soldered and assembled in automated processes in the factory. This gives them better electrical and mechanical properties than manually installed connectors. Owing to their superior performance, jumpers are commonly used in in-building and DAS projects.

Cables are assigned to different classes depending on their reaction to fire behavior. These range from readily flammable (Class F) to non-combustible (Class A). Classes A to D require not only testing of samples, but also regular factory audits and sample taking from ongoing production. Other criteria such as smoke emissions (s), burning droplets (d) and acidity (a) are also taken into account. All of these properties are determined by independent testing institutions, which certify each product while assigning it to a harmonized euroclass.

The CPR cables supplied under the SpinnerFlex® brand name undergo these tests and are also certified as complying with EU regulation no. EN 50575:2014.

SpinnerFlex® cables and jumpers have a B2ca classification, i.e. they prevent or effectively slow the spread of fire. When ordering CPR-compliant jumpers, please specify a type "C" cable jacket (see next page).

Sales Article Numbers for SpinnerFlex® TopFit Jumpers

Jumper	Cable Type	Cable Size	Cable Jacket		Connector 1	Connector 2		Length	Unit	Length	Extra Features
J	Z	X	Z	-	XZ	XZ	-	X	Z	X	-Z
			Blank for PE		Any combination of connectors below is possible. Please specify an XZ combination for connectors 1 and 2. In case of pigtail leave blank for connector 2						Leave blank if not applicable
LF	L										
SF	S										
1/4"		14									
3/8"		38									
1/2"		12									
Fire retardant			F								
Construction Products Regulation (CPR)			C								
Gray			G								

X = Connector System	Z = Connector Style	X	Z
7-16	Male	7	M
4.1-9.5	Male right angle	41	R
N	Female (right angle)	N	F(R)
	Female bulkhead (right angle)		B(R)
	Female four-hole panel (right angle)		P(R)
4.3-10	Male; screw	43	MS
2.2-5	Male; hand screw	22	MH
NEX10®	Male; push-pull		MP
	Male right angle; screw		RS
	Male right angle; hand screw		RH
	Male right angle; push-pull		RP
	Female (right angle)		F(R)
	Female bulkhead (right angle)		B(R)
	Female four-hole panel (right angle)		P(R)

Length in meters/feet (depending on unit specified)	
Meters as unit	M
Feet as unit	F
Length in decimeters/inches (depending on unit specified)	

Low PIM Measurement Cable (only available with PE jacket)	
- Passive intermodulation (IM3) @ 2 x 20 W ≤ -160 dBc[1], inspection certificate 3.1[2], per jumper	I0
- Passive intermodulation (IM3) @ 2 x 20 W ≤ -160 dBc[1], inspection certificate 3.1[2], per order	I1
- Passive intermodulation (IM3) @ 2 x 20 W ≤ -165 dBc[1], inspection certificate 3.1[2], per jumper	I2
- Passive intermodulation (IM3) @ 2 x 20 W ≤ -165 dBc[1], inspection certificate 3.1[2], per order	I3
- Passive intermodulation (IM3) @ 2 x 20 W ≤ -170 dBc[1], inspection certificate 3.1[2], per jumper	I4
- Passive intermodulation (IM3) @ 2 x 20 W ≤ -170 dBc[1], inspection certificate 3.1[2], per order	I5
Defined phase length	P
Extended frequency range (> 3800 MHz)	E
Connector specified on side B kitted to the jumper	K
Jumper set	S

[1] According to IEC 62037-2 and WN 20 000
[2] According to EN 10204

Examples of sales article numbers:

JS12-7M43RS-2M5: (2.5-meter-long SF 1/2" cable with 7-16 male and 4.3-10 male right-angle screw type connectors)

JS38C-43MS43MS-6M: (6-meter-long CPR-compliant SF 3/8" cable with 4.3-10 male screw type connectors)

For further sales article numbers, please visit our webpage www.spinner-group.com/san

HIGH FREQUENCY PERFORMANCE WORLDWIDE

SPINNER designs and builds cutting-edge radio frequency systems, setting performance and longevity standards for others to follow. The company's track record of innovation dates back to 1946, and many of today's mainstream products are rooted in SPINNER inventions.

Industry leaders continue to count on SPINNER's engineering excellence to drive down their costs of service and ownership with premium-quality, off-the-shelf products and custom solutions. Headquartered in Munich, Germany, the global frontrunner in RF components remains the first choice in simple-yet-smart RF solutions.

www.spinner-group.com

SPINNER GmbH
Headquarters
Erzgiessereistr. 33
80335 Munich
GERMANY
Phone: +49 89 12601-0
Fax: +49 89 12601-1292
info@spinner-group.com

SPINNER Austria GmbH
Triester Str. 190
1230 Vienna
AUSTRIA
Phone: +43 1 66277 51
Fax: +43 1 66277 5115
info-austria@spinner-group.com

SPINNER Electrotécnica S.L.
c/ Perú, 4 – Local n° 15
28230 Las Rozas (Madrid)
SPAIN
Phone: +34 91 6305 842
Fax: +34 91 6305 838
info-iberia@spinner-group.com

OOO SPINNER Elektrotechnik
Kozhevnicheskaja str. 1, bld. 1
Office 420
115114 Moscow
RUSSIA
Phone: + 7 495 638 5321
Fax: +7 495 240 5889
info-russia@spinner-group.com

SPINNER France S.A.R.L.
24 Rue Albert Priolet
78100 St. Germain en Laye
FRANCE
Phone: +33 1 74 13 85 24
info-france@spinner-group.com

SPINNER ICT Inc.
2220 Northmont Parkway, 250
Duluth, GA 30096
USA
Phone: +1 770 2636 326
info@spinner-group.com

SPINNER Nordic AB
Kråketorpsgatan 20
43153 Mölndal
SWEDEN
Phone: +46 31 7061670
Fax: +46 31 7061679
info-nordic@spinner-group.com

SPINNER Telecommunication
Devices (Shanghai) Co., Ltd.
351 Lian Yang Road
Songjiang Industrial Zone
Shanghai 201613
P.R. CHINA
Phone: +86 21 577 45377
Fax: +86 21 577 40962
info-china@spinner-group.com

SPINNER UK Ltd.
Suite 8 Phoenix House
Golborne Enterprise Park,
High Street
Golborne, Warrington
WA3 3DP
UNITED KINGDOM
Phone: +44 1942 275222
Fax: +44 1942 275221
info-uk@spinner-group.com

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