

# MotionCables

sumcab

TMC

sumcab  
specialcable group

Cables for Cable Chains  
and Industrial Robotics

[www.sumcab.com](http://www.sumcab.com)

**Your reliable  
partner  
anywhere in  
the world.**

# MotionCables

Cables for Cable Chains  
and Industrial Robotics







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## Disclaimer

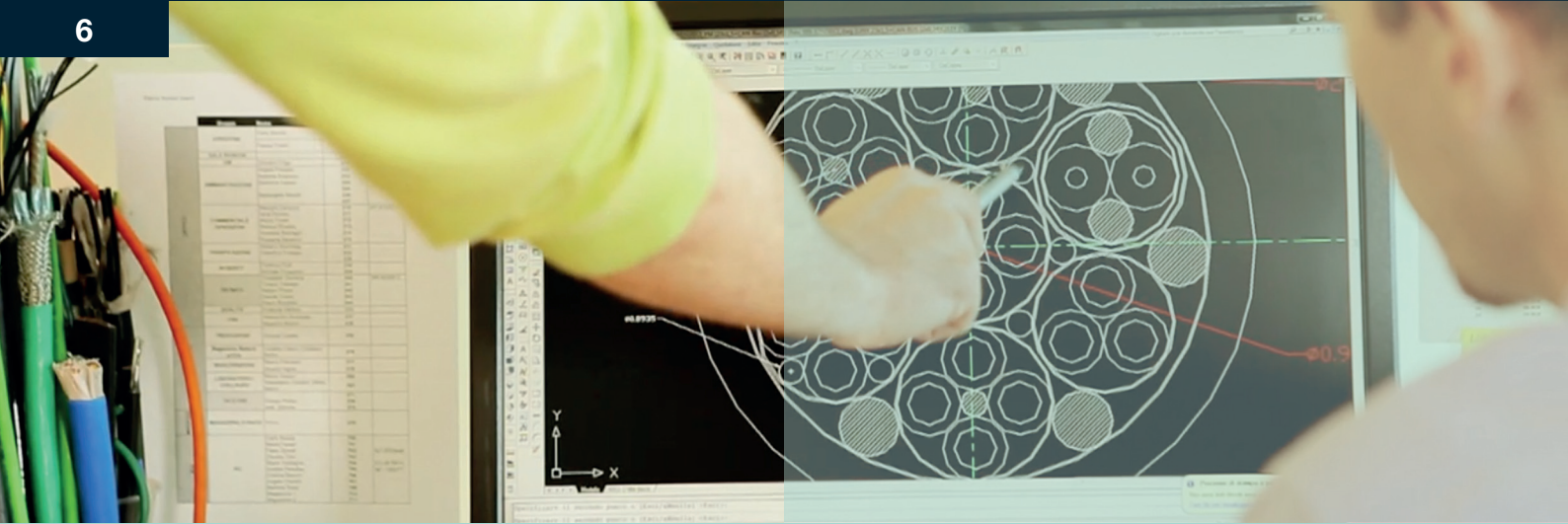
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## General conditions of sale

The general conditions of sale applied are those that are currently valid and detailed at [www.sumcab.com](http://www.sumcab.com).

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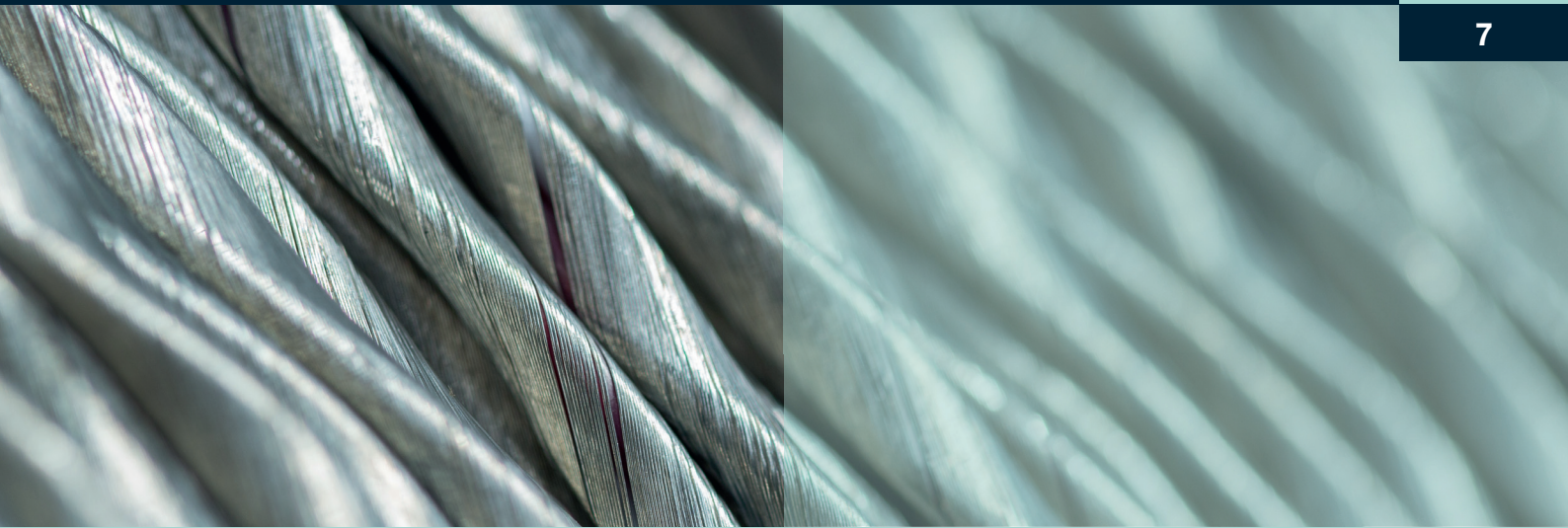


## Design and Production

Sumcab Specialcable Group, is a global group that designs, manufactures and supplies top quality special cables. We provide solutions to the most diverse range of national and international markets. We accompany our clients from the engineering stage up to actually carrying out the project. Our key markets are Industrial Plants (On & Offshore), Industrial Automation, Traffic and Green Energy.

Unique markets demand unique solutions. The features required for electric cables, due to their characteristics and uses, require a high level of safety. Sumcab is a global supplier of cables that are specially manufactured for the industrial automation market. We make all of our experience available to clients in order to meet their needs. Cables for specific applications according to national and international standards.

Our clients attest to this, having shown their trust in us and our products for more than 18 years.



Sumcab Market Units



Industrial Plants

- Instrumentation & Control
- Low Voltage
- Medium Voltage
- Thermocouple
- Offshore
- Marine
- Field Bus
- High Temperature
- Heavy Duty
- Special Applications



Industrial Automation

- Control
- Fieldbus
- Servo & Encoder
- Robotics
- Energy Supply Systems
- Cable Harnesses
- MTPReel®
- Special Applications



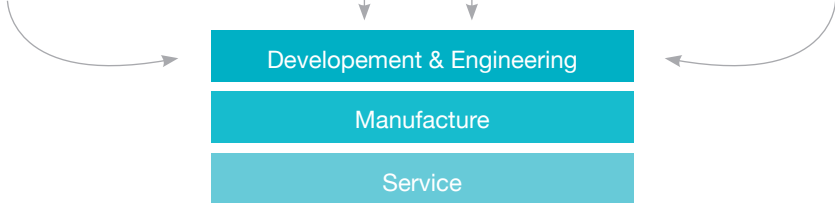
Traffic

- Rolling Stock Databus
- Marine Low Voltage
- Marine Control
- Offshore
- Airport
- Special Applications



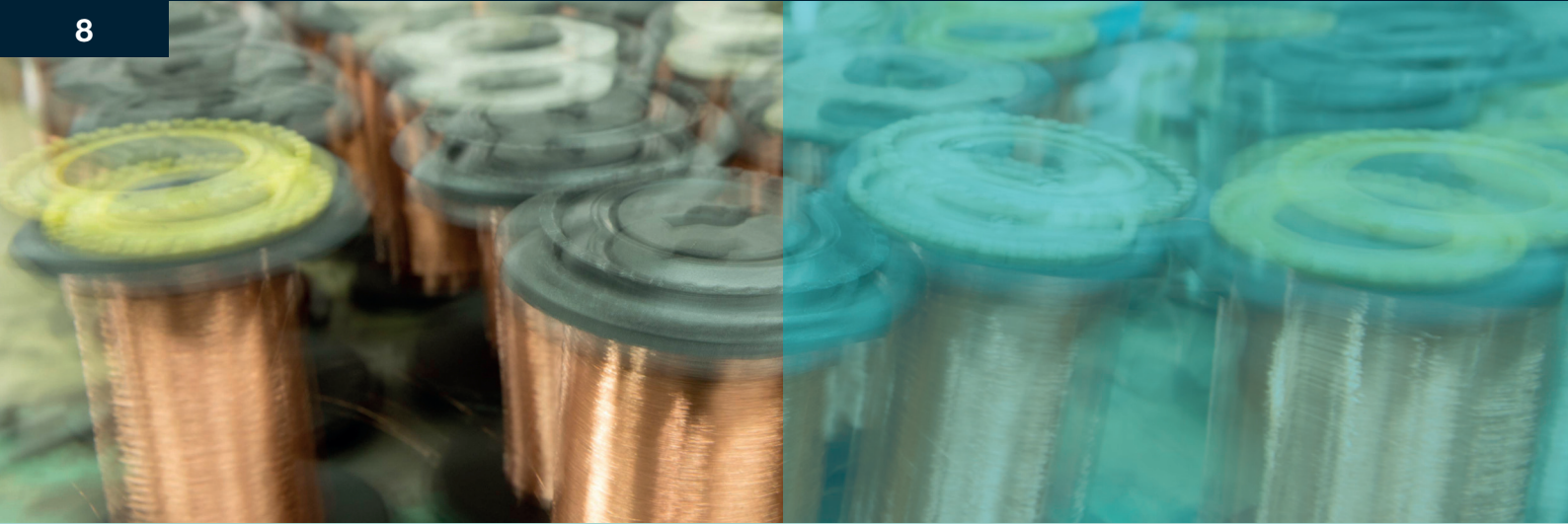
Green Energy

- Instrumentation & Control
- Low Voltage
- Medium Voltage
- Field Bus
- Databus
- High Temperature
- Special Applications



# TMC

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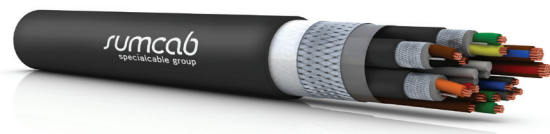


## Production Center

### SUMCAB TAILOR MADE CABLES (Spain)

Production center with state-of-the-art technology for the manufacture of cables, which allows us to work with the most varied raw materials. First factory in Spain specializing in the design and manufacture of cables for robotics. Cables capable of withstanding over three million 3D movements (bending, torsion, centrifugal forces). Our products are approved and in use by national and international OEMs.

- » Robotic
- » Offshore
- » Tray Cables
- » Field Bus
- » Medical
- » Traffic (Rolling Stock and Aeronáutica)
- » Tailor Made Solutions
- » Instrumentation & Control





## Quality

**Grupo Sumcab** prioritises the quality of its products and services above all else. By investing effort and resources in the quality and durability of our products, we constantly optimise the production processes, thus maintaining an excellent PRICE-QUALITY ratio.

All cables meet strict technical requirements in terms of electrical safety and fire performance.

Specially designed sheath and insulation materials achieve excellent product features which meet the demand for high safety and a long service life under extreme operating conditions while reducing service life costs significantly.



Along with the purchase price for a piece of equipment, associated costs play an increasingly important role. Cable systems often only amount to a small cost of the materials linked to a piece of equipment or a machine, however, cable technology and associated services can have a crucial influence on associated costs. Particularly, during the operation phase, when optimal functionality and durability factors, ease of repair and a high grade of availability at the plant become key benefits in relation to cost.





# MotionCables

## PRODUCTS

### Cables for Cable Chains

#### Signal & data transmission

Sumodrive 410  
Sumodrive 410C  
Sumodrive® 412C  
Sumodrive® 420  
Sumodrive® 420C  
Sumodrive® 422C

#### Power & control

Sumflex CP 2100  
Sumflex CP 2100C  
Sumodrive® 510  
Sumodrive® 510C  
Sumodrive® 520  
Sumodrive® 520C

#### Encoder & Resolver for Servo

Sumodrive® 710C  
Sumodrive® 720C

#### Power for Servo

Sumodrive® 910C  
Sumodrive® 920C

#### Communication

Industry 4.0  
Profinet  
Industrial Ethernet  
Profibus DP

### Cables for Industrial Robotics

Industrial robotics  
Sumflex Mechatronic  
Sumflex® Mechatronic HFS

## Guaranteed reliability & Quality

The cables for cable chains power and/or control mobile machines and therefore it is of vital importance to guarantee perfect operation of the system (Transport of energy, control, data and communication).

During the useful life of a cable, it will be subject to millions of movements in very limited space, friction, very high movement speeds as well as constant accelerations and decelerations.

Other factors such as bend radius, severe industrial environments, service temperature and contact with aggressive chemical products will also affect the longevity of the cable.

To respond to these needs, Sumcab offers a wide range of special cables for cable chains.

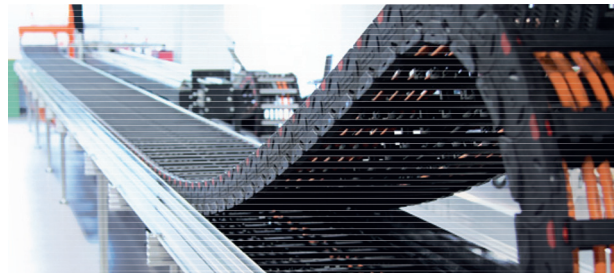
We develop and manufacture special cables that comply with the most demanding requirements for mechanical resistance, chemical aggression and thermal range. Cables for use in automated machinery, cable chains or industrial robots.

The cables must withstand millions of bending, always with very small bend radii ( $5 \times d$ ).

As well as this, they must be resistant to a wide variety of additional environmental effects, such as variable temperatures, oils/greases and/or chemical products.

In order to comply with said demands, our cables for movement are tested in our own laboratory with a testing system. This system of our own design verifies the cables with rapid accelerations and decelerations and with continuous efforts of traction and bending.

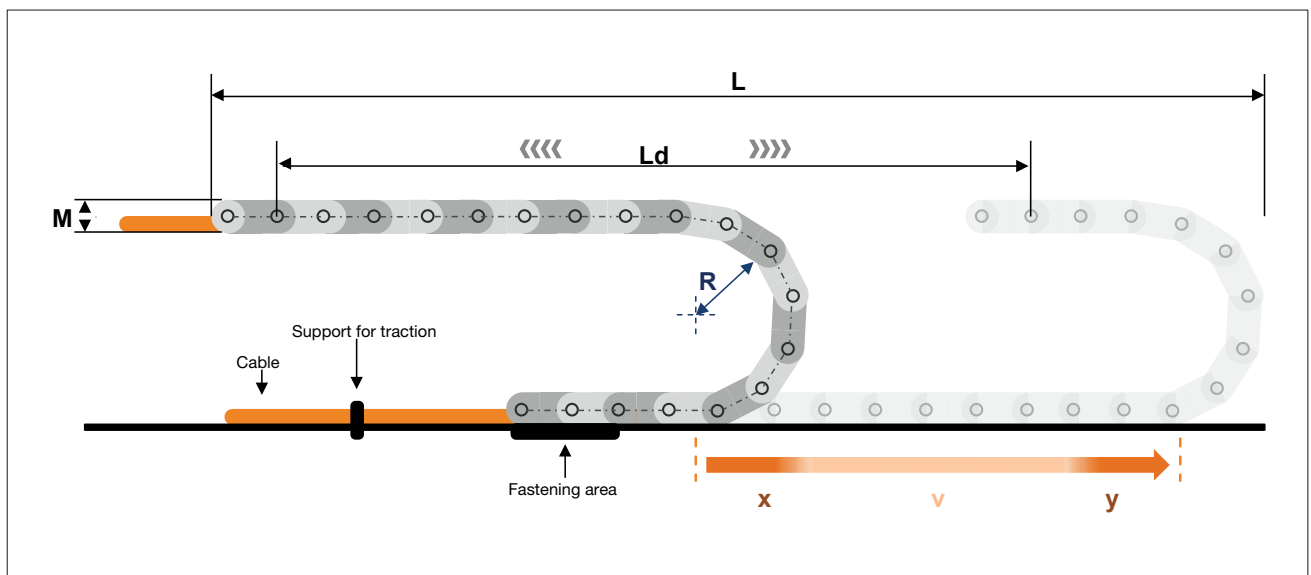
European companies that are leaders in the automotive sector already trust in our products, providing the necessary approvals for use in their production plants.



# The correct choice of cable

In order to choose the adequate cable chains, the following criteria must be taken into account:

- Application (Power, control, data, communication, etc.)
- Type of chain (Metal or plastic)
- Interior measurements of the chain
- Length of the chain
- Movement speed
- Acceleration / Deceleration
- Bend radius
- Work environment (Service temperature, contact with external agents, etc.)
- Horizontal or vertical installation



<b>L</b>	Chain length (mm)	<b>M</b>	Int.chain measurements (mm)	<b>x</b>	Max. acceleration (m/s <sup>2</sup> )	<b>v</b>	Max. speed (m/s)
<b>Ld</b>	Distance (mm)	<b>R</b>	Bend radius (mm)	<b>y</b>	Max. deceleration. (m/s <sup>2</sup> )		

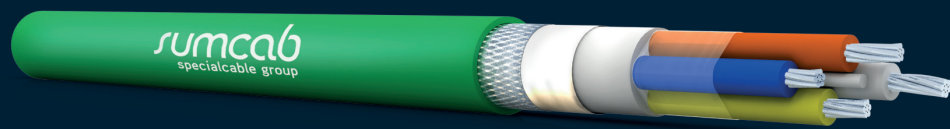
## Recommendations for correct installation

These recommendations are based on our acquired experience with the use of our cables.

- Before using the cables, they must be stored for a minimum of 24 hours at room temperature in order to permit a simple and optimum mechanical assembly.
- The cables must be maintained on the reels until they are fully used. Repeated rewinding should be avoided.
- The bend radius of the cables must not be less than that indicated in our technical sheet in order to guarantee maximum useful life of the cables.
- When the cables are placed on the chain, it must be ensured that they are totally free from torsion.
- The marking of the cables on the cover can not be used as a guide to ensure that the cables do not twist.
- The disposition of the cables on the chains can be carried out in such a manner that the heavier cables stay on the outer part of the chain and the lighter cables stay on the inner part. It is also important to ensure that the weight is well distributed.
- The cables must be placed on the chain in such a manner that they are not loose and do not rub against any object. The cable must be able to move easily. For this reason, the cable must have a minimum looseness of 10% of the diameter of the cable but never more than 50%.
- In the case of vertical chains, a minimum space of 20% of the cable diameter is recommended in order to avoid the cables pressing against each other.
- On the lower part of the chain, the cables must move easily longitudinally at any time. No coupling or fixing guide is permitted for use. During the bending, the cables must be totally free from traction.
- The fixation of the cables on both ends of the chains must be carried out with pressure releasers in order to permit the movement of each thread. The cables cannot be bent before they are fixed. The fixation or guiding of the cables on both ends must remain at a minimum distance of 20 x the diameter of the cable from the point of the bending movement.
- After a brief period of operation, the position of the cables must be verified again. It may be necessary to readjust the length of the cable in the fixation in order to permit central positioning.
- In the case of breakage or damage of the chain, the components must be substituted as they may cause permanent damage to the cables due to excess winding, formation of notches or cuts.
- It is also important to take into account the assembly standards from the chain manufacturer.



## Cables for cable chains



## Sumodrive® 410

Signal & data transmission

**Application:** Signal cable, extra flexible with thermoplastic polymer insulation and PUR sheath, for use in cable chains with movement speed of up to 250 m/min. UL & CSA certified. Halogen free and flame retardant cable.



### Design

Conductor	Fine threads of bare copper, extra flexible, Class 6 according to EN 60228
Insulation	Thermoplastic polymer
Identification	DIN 47100 (colours)
Cabling	In concentric layers with optimum feed-through cabling
Exterior sheath	PUR, grey colour RAL 7001

### Technical Details

Service voltage	600V
Test voltage	4000V
Minimum bend radius	7,5 x outer diameter
Service temperature	-5°C to +80°C
Max. movement speed	250 m/min.
Max. acceleration/ deceleration	30 m/s <sup>2</sup>
Max. horizontal movement	max. 25m
Number of cycles:	Min. 1 mio. / Max. 10 mio. Depending on the exact application. For more information, contact your Sumcab technical sales manager.

### General features

UL & CSA	Certification for USA and Canada
UL FT2	Flame retardant
HD 22.10	Resistance to oils and industrial greases
EN 60754-1	Halogen free
Other features	Good resistance to acids, alkaline solutions, solvents, hydraulic liquids, etc.
	Resistant to abrasion and cuts
	Outer sheath with low-adherence surface
	Excellent resistance to moisture

### Application markets

Tool Machine
Automation
Packaging
Food & Beverage
Chemical Industry
Pharmaceutical Industry
Glass and Ceramics Industry
Electronics Industry
Aeronautical Industry
Transport & Logistics



## Signal &amp; data transmission

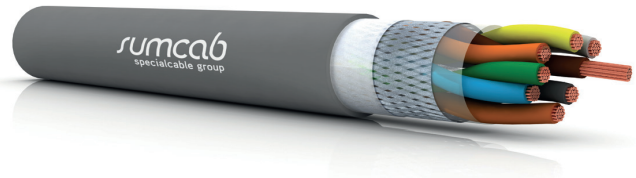
Code	N° of conductor x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
155000020120100	2x0,25	4,2	19,7
155000030120100	3x0,25	4,4	23,4
155000040120100	4x0,25	4,7	27,4
155000050120100	5x0,25	5	31,1
155000070120100	7x0,25	5,7	40,5
155000120120100	12x0,25	7,0	61,9
155000180120100	18x0,25	8	84,4
155000250120100	25x0,25	9,4	109,9
155000020130100	2x0,34	4,4	22,5
155000030130100	3x0,34	4,6	27,2
155000040130100	4x0,34	4,9	33
155000050130100	5x0,34	5,3	37,6
155000070130100	7x0,34	6,1	48,8
155000120130100	12x0,34	7,4	76,3
155000180130100	18x0,34	8,5	103,7
155000250130100	25x0,34	10,2	140,9
155000020160100	2x0,50	5,6	35,6
155000030160100	3x0,50	5,8	42,7
155000040160100	4x0,50	6,2	51
155000050160100	5x0,50	6,7	59,4
155000070160100	7x0,50	7,6	73,4
155000120160100	12x0,50	8,9	111,9
155000180160100	18x0,50	10,3	159,4
155000250160100	25x0,50	12,2	209
155000340160100	34x0,50	13,7	277,5
155000360160100	36x0,50	13,7	288,8

Sumcab reserves the right to modify these specifications with no prior notice.

## Sumodrive® 410C

Signal & data transmission

**Application:** Shielded signal cable, extra flexible with thermoplastic polymer insulation and PUR sheath, for use in cable chains with movement speed of up to 250 m/min. UL & CSA certified. Halogen free and flame retardant cable.



### Design

Conductor	Fine threads of bare copper, extra flexible, Class 6 according to EN 60228
Insulation	Thermoplastic polymer
Identification	DIN 47100 (colours)
Cabling	In concentric layers with optimum feed-through cabling
Shielding	Tinned copper braid
Exterior sheath	PUR, grey colour RAL 7001

### Technical Details

Service voltage	250V
Test voltage	2500V
Minimum bend radius	7.5 x outer diameter
Service temperature	-5°C to +80°C
Max. movement speed	250 m/min.
Max. acceleration/ deceleration	30 m/s <sup>2</sup>
Max. horizontal movement	max. 25m
Number of cycles:	Min. 1 mio. / Max. 10 mio. Depending on the exact application. For more information, contact your Sumcab technical sales manager.

### General features

UL & CSA	Certification for USA and Canada
UL FT2	Flame retardant
HD 22.10	Resistance to oils and industrial greases
EN 60754-1	Halogen free
Other features	Good resistance to acids, alkaline solutions, solvents, hydraulic liquids, etc.
	Resistant to abrasion and cuts
	Outer sheath with low-adherence surface
	Excellent resistance to moisture

### Application markets

Tool Machine
Automation
Packaging
Food & Beverage
Chemical Industry
Pharmaceutical Industry
Glass and Ceramics Industry
Electronics Industry
Aeronautical Industry
Transport & Logistics



## Signal &amp; data transmission

Code	No. of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
155100020120100	2x0,25	4,6	30,4
155100030120100	3x0,25	4,8	35,2
155100040120100	4x0,25	5,1	40,4
155100050120100	5x0,25	5,5	46,5
155100070120100	7x0,25	6,2	56,4
155100120120100	12x0,25	7,5	81,7
155100180120100	18x0,25	8,5	108,6
155100250120100	25x0,25	10	151,1
155100020130100	2x0,34	4,9	35,4
155100030130100	3x0,34	5,1	39,2
155100040130100	4x0,34	5,5	46,3
155100050130100	5x0,34	5,8	53,3
155100070130100	7x0,34	6,6	66
155100120130100	12x0,34	7,9	97,5
155100180130100	18x0,34	9	144,2
155100250130100	25x0,34	10,8	188,4
155100020160100	2x0,50	6,1	50,7
155100030160100	3x0,50	6,3	59
155100040160100	4x0,50	6,7	68,8
155100050160100	5x0,50	7,1	78,2
155100070160100	7x0,50	8,2	98
155100120160100	12x0,50	9,6	154,3
155100180160100	18x0,50	11,1	208,9
155100250160100	25x0,50	12,9	267,8
155100340160100	34x0,50	14,6	344,8
155100360160100	36x0,50	14,6	356,1

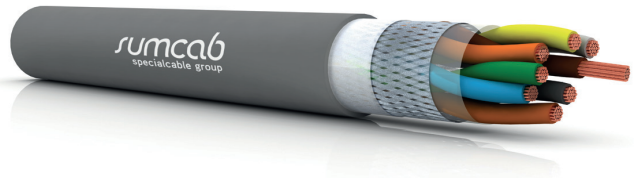
Sumcab reserves the right to modify these specifications with no prior notice.



## Sumodrive® 412C

Signal & data transmission

**Application:** Shielded and twisted in pairs signal cable, extra flexible with thermoplastic polymer insulation and PUR sheath, for use in cable chains with movement speed of up to 250 m/min. UL & CSA certified. Halogen free and flame retardant cable.



### Design

Conductor	Fine threads of bare copper, extra flexible, Class 6 according to EN 60228
Insulation	Thermoplastic polymer
Identification	DIN 47100 (colours)
Cabling	Braiding in pairs
Shielding	Tinned copper braid
Exterior sheath	PUR, grey colour RAL 7001

### Technical Details

Service voltage	250V
Test voltage	2500V
Minimum bend radius	7,5 x outer diameter
Service temperature	-5°C to +80°C
Max. movement speed	250 m/min.
Max. acceleration/ deceleration	30 m/s <sup>2</sup>
Max. horizontal movement	max. 25m
Number of cycles:	Min. 1 mio. / Max. 10 mio. Depending on the exact application. For more information, contact your Sumcab technical sales manager.

### General features

UL & CSA	Certification for USA and Canada
UL FT2	Flame retardant
HD 22.10	Resistance to oils and industrial greases
EN 60754-1	Halogen free
Other features	Good resistance to acids, alkaline solutions, solvents, hydraulic liquids, etc.
	Resistant to abrasion and cuts
	Outer sheath with low-adherence surface
	Excellent resistance to moisture

### Application markets

Tool Machine
Automation
Packaging
Food & Beverage
Chemical Industry
Pharmaceutical Industry
Glass and Ceramics Industry
Electronics Industry
Aeronautical Industry
Transport & Logistics



## Signal &amp; data transmission

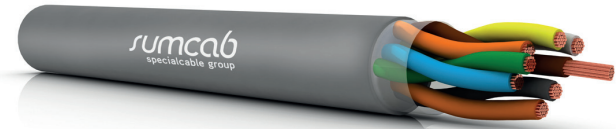
Code	N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
155220010060100	1x2x0,14	4,4	23,8
155220020060100	2x2x0,14	5,3	34,2
155220030060100	3x2x0,14	5,9	41,6
155220040060100	4x2x0,14	6,3	48,1
155220050060100	5x2x0,14	6,7	53,9
155220060060100	6x2x0,14	7,4	63,6
155220070060100	7x2x0,14	7,8	70,2
155220120060100	12x2x0,14	9,4	111
155220180060100	18x2x0,14	10,4	141,2
155220250060100	25x2x0,14	11,7	177,7
155220010120100	1x2x0,25	4,6	27,6
155220020120100	2x2x0,25	5,7	41,2
155220030120100	3x2x0,25	6,3	51,3
155220040120100	4x2x0,25	7	63,1
155220050120100	5x2x0,25	7,5	71,9
155220060120100	6x2x0,25	8,1	83
155220070120100	7x2x0,25	8,5	91,3
155220120120100	12x2x0,25	10,5	149,7
155220180120100	18x2x0,25	11,4	191,5
155220250120100	25x2x0,25	12,9	245,2
155220010130100	1x2x0,34	4,9	32,3
155220020130100	2x2x0,34	6,1	48,5
155220030130100	3x2x0,34	7	62,8
155220040130100	4x2x0,34	7,5	74,1
155220050130100	5x2x0,34	8,1	85,8
155220060130100	6x2x0,34	8,9	110,7
155220070130100	7x2x0,34	9,3	121,7
155220120130100	12x2x0,34	11,3	178,8
155220180130100	18x2x0,34	12,4	234,9
155220250130100	25x2x0,34	14,2	307

Sumcab reserves the right to modify these specifications with no prior notice.

## Sumodrive® 420

Signal & data transmission

**Application:** Signal cable, extra flexible with TPE-E insulation and PUR sheath, for use in cable chains with movement speed of up to 300 m/min. UL & CSA certified. Halogen free and flame retardant cable.



### Design

Conductor	Fine threads of bare copper, extra flexible, Class 6 according to EN 60228
Insulation	TPE-E
Identification	DIN 47100 (colours)
Cabling	In concentric layers with optimum feed-through cabling
Exterior sheath	PUR, grey colour RAL 7001

### Technical Details

Service voltage	250V
Test voltage	2500V
Minimum bend radius	5 x outer diameter
Service temperature	-40°C to +80°C
Max. movement speed	300m/min.
Max. acceleration/ deceleration	40 m/s <sup>2</sup>
Max. horizontal movement	distance 100 m
Number of cycles:	Min. 1 mio. / Max. 10 mio. Depending on the exact application. For more information, contact your Sumcab technical sales manager.

### General features

UL & CSA	Certification for USA and Canada
UL FT2	Flame retardant
HD 22.10	Resistance to oils and industrial greases
EN 60754-1	Halogen free
Other features	Good resistance to acids, alkaline solutions, solvents, hydraulic liquids, etc.
	Resistant to abrasion and cuts
	Outer sheath with low-adherence surface
	Excellent resistance to moisture

### Application markets

Tool Machine
Automation
Packaging
Food & Beverage
Chemical Industry
Pharmaceutical Industry
Glass and Ceramics Industry
Electronics Industry
Aeronautical Industry
Transport & Logistics



## Signal &amp; data transmission

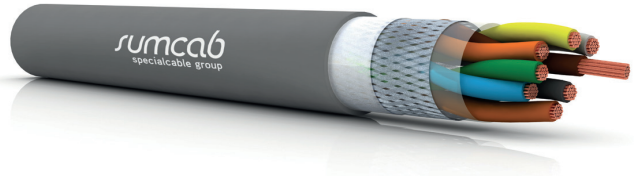
Code	N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
155300020120100	2x0,25	4,2	18,1
155300030120100	3x0,25	4,4	21,9
155300040120100	4x0,25	4,7	25,7
155300050120100	5x0,25	5	29,4
155300070120100	7x0,25	5,7	38,6
155300120120100	12x0,25	7,0	59,6
155300180120100	18x0,25	8	82,2
155300250120100	25x0,25	9,4	107,6
155300340120100	34x0,25	10,6	144
155301360120100	36x0,25	10,6	150,4
155300020130100	2x0,34	4,4	20,9
155300030130100	3x0,34	4,6	25,5
155300040130100	4x0,34	4,9	31,3
155300050130100	5x0,34	5,3	35,9
155300070130100	7x0,34	6,1	46,8
155300120130100	12x0,34	7,4	73,8
155300180130100	18x0,34	8,5	101,3
155300250130100	25x0,34	10,2	138
155300340130100	34x0,34	11,3	179,3
155300360130100	36x0,34	11,3	187,8
155300020160100	2x0,50	5,6	32,8
155300030160100	3x0,50	5,8	39,9
155300040160100	4x0,50	6,2	48,2
155300050160100	5x0,50	6,7	56,3
155300070160100	7x0,50	7,6	70,5
155300120160100	12x0,50	8,9	108,8
155300180160100	18x0,50	10,3	155,8
155300250160100	25x0,50	12,2	205,6
155300340160100	34x0,50	13,7	273,9
155300360160100	36x0,50	13,7	285,5

Sumcab reserves the right to modify these specifications with no prior notice.

## Sumodrive® 420C

Signal & data transmission

**Application:** Shielded signal cable, extra flexible with TPE-E insulation and PUR sheath, for use in cable chains with movement speed of up to 300 m/min. UL & CSA certified. Halogen free and flame retardant cable.



### Design

Conductor	Fine threads of bare copper, extra flexible, Class 6 according to EN 60228
Insulation	TPE-E
Identification	DIN 47100 (colours)
Cabling	In concentric layers with optimum feed-through cabling
Shielding	Tinned copper braid
Exterior sheath	PUR, grey colour RAL 7001

### Technical Details

Service voltage	250V
Test voltage	2500V
Minimum bend radius	7.5 x outer diameter
Service temperature	-40°C to +80°C
Max. movement speed	300m/min.
Max. acceleration/ deceleration	40 m/s <sup>2</sup>
Max. horizontal movement	distance 100 m
Number of cycles:	Min. 1 mio. / Max. 10 mio. Depending on the exact application. For more information, contact your Sumcab technical sales manager.

### General features

UL & CSA	Certification for USA and Canada
UL FT2	Flame retardant
HD 22.10	Resistance to oils and industrial greases
EN 60754-1	Halogen free
Other features	Good resistance to acids, alkaline solutions, solvents, hydraulic liquids, etc.
	Resistant to abrasion and cuts
	Outer sheath with low-adherence surface
	Excellent resistance to moisture

### Application markets

Tool Machine
Automation
Packaging
Food & Beverage
Chemical Industry
Pharmaceutical Industry
Glass and Ceramics Industry
Electronics Industry
Aeronautical Industry
Transport & Logistics





## Signal &amp; data transmission

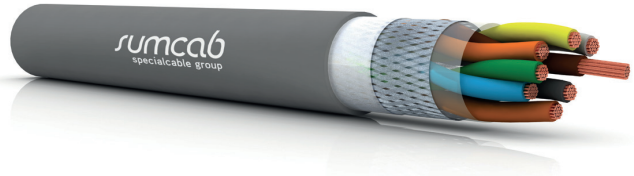
Code	N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
155400020120100	2x0,25	4,6	28,3
155400030120100	3x0,25	4,8	33
155400040120100	4x0,25	5,1	38,1
155400050120100	5x0,25	5,5	44,1
155400070120100	7x0,25	6,2	53,8
155400120120100	12x0,25	7,5	78,6
155400180120100	18x0,25	8,5	105,3
155400250120100	25x0,25	10,0	147,3
155400340120100	34x0,25	11,1	189,2
155400360120100	36x0,25	11,3	195,6
155400020130100	2x0,34	4,9	33,1
155400030130100	3x0,34	5,1	36,9
155400040130100	4x0,34	5,5	44
155400050130100	5x0,34	5,8	50,8
155400070130100	7x0,34	6,6	63,2
155400120130100	12x0,34	7,9	94,2
155400180130100	18x0,34	9	140,1
155400250130100	25x0,34	10,8	183,6
155400340130100	34x0,34	11,8	231,4
155400360130100	36x0,34	12,0	239,9
155400020160100	2x0,50	6,1	47,1
155400030160100	3x0,50	6,3	55,4
155400040160100	4x0,50	6,7	65
155400050160100	5x0,50	7,1	76,3
155400070160100	7x0,50	8,2	93,8
155400120160100	12x0,50	9,6	149,3
155400180160100	18x0,50	11,1	203,2
155400250160100	25x0,50	12,9	262
155400340160100	34x0,50	14,6	338,4
155400360160100	36x0,50	14,6	350

Sumcab reserves the right to modify these specifications with no prior notice.

## Sumodrive® 422C

Signal & data transmission

**Application:** Shielded and braided in pairs signal cable, extra flexible with polypropylene insulation and PUR sheath, for use in cable chains with movement speed of up to 300 m/min. UL & CSA certified. Halogen free and flame retardant cable.



### Design

Conductor	Fine threads of bare copper, extra flexible, Class 6 according to EN 60228
Insulation	TPE-E
Identification	DIN 47100 (colours)
Cabling	Braiding in pairs
Shielding	Tinned copper braid
Exterior sheath	PUR, grey colour RAL 7001

### Technical Details

Service voltage	250V
Test voltage	2500V
Minimum bend radius	7.5 x outer diameter
Service temperature	-40°C to +80°C
Max. movement speed	300m/min.
Max. acceleration/ deceleration	40 m/s <sup>2</sup>
Max. horizontal movement	distance 100 m
Number of cycles:	Min. 1 mio. / Max. 10 mio. Depending on the exact application. For more information, contact your Sumcab technical sales manager.

### General features

UL & CSA	Certification for USA and Canada
UL FT2	Flame retardant
HD 22.10	Resistance to oils and industrial greases
EN 60754-1	Halogen free
Other features	Good resistance to acids, alkaline solutions, solvents, hydraulic liquids, etc.
	Resistant to abrasion and cuts
	Outer sheath with low-adherence surface
	Excellent resistance to moisture

### Application markets

Tool Machine
Automation
Packaging
Food & Beverage
Chemical Industry
Pharmaceutical Industry
Glass and Ceramics Industry
Electronics Industry
Aeronautical Industry
Transport & Logistics



## Signal &amp; data transmission

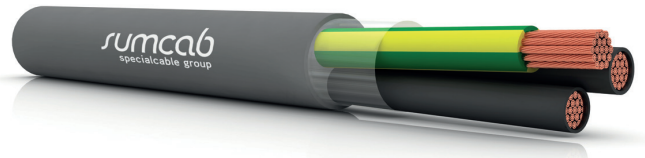
Code	N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
155520010060100	1x2x0,14	4,4	23,8
155520020060100	2x2x0,14	5,3	34,2
155520030060100	3x2x0,14	5,9	41,6
155520040060100	4x2x0,14	6,3	48,1
155520050060100	5x2x0,14	6,7	53,9
155520060060100	6x2x0,14	7,4	63,6
155520070060100	7x2x0,14	7,8	70,2
155520120060100	12x2x0,14	9,4	111
155520180060100	18x2x0,14	10,4	141,2
155520250060100	25x2x0,14	11,7	177,7
155520010120100	1x2x0,25	4,6	27,6
155520020120100	2x2x0,25	5,7	41,2
155520030120100	3x2x0,25	6,3	51,3
155520040120100	4x2x0,25	7	63,1
155520050120100	5x2x0,25	7,5	71,9
155520060120100	6x2x0,25	8,1	83
155520070120100	7x2x0,25	8,5	91,3
155520120120100	12x2x0,25	10,5	149,7
155520180120100	18x2x0,25	11,4	191,5
155520250120100	25x2x0,25	12,9	245,2
155520010130100	1x2x0,34	4,9	32,3
155520020130100	2x2x0,34	6,1	48,5
155520030130100	3x2x0,34	7	62,8
155520040130100	4x2x0,34	7,5	74,1
155520050130100	5x2x0,34	8,1	85,8
155520060130100	6x2x0,34	8,9	110,7
155520070130100	7x2x0,34	9,3	121,7
155520120130100	12x2x0,34	11,3	178,8
155520180130100	18x2x0,34	12,4	234,9
155520250130100	25x2x0,34	14,2	307

Sumcab reserves the right to modify these specifications with no prior notice.

## Sumflex® CP 2100

Power & control

**Application:** Power and control cable, extra flexible with PVC sheath, for use in cable chains with movement speed of up to 200 m/min. Flame retardant cable.



### Design

Conductor	Fine threads of bare copper, extra flexible, Class 6 according to EN 60228
Insulation	PVC
Identification	Black with white numbers, conductor yw/grn (G)
Cabling	In concentric layers with optimum feed-through cabling
Exterior sheath	PVC, grey colour RAL 7001

### Technical Details

Service voltage	300/500V
Test voltage	2.500V
Minimum bend radius	7.5 x outer diameter
Service temperature	-5°C to +80°C
Max. movement speed	200m/min.
Max. acceleration/ deceleration	15 m/s²
Max. horizontal movement	distance 10 m
Number of cycles:	Min. 1 mio. / Max. 10 mio. Depending on the exact application. For more information, contact your Sumcab technical sales manager.

### General features

IEC 60332-1-2	Flame retardant
IEC 60811-2-1	Resistance to oils and industrial greases

### Application markets

Tool Machine
Automation
Packaging
Food & Beverage
Chemical Industry
Pharmaceutical Industry
Glass and Ceramics Industry
Electronics Industry
Aeronautical Industry
Transport & Logistics

## Power &amp; control

N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
2x0,5	5,3	35
3G0,5	5,5	42,9
4G0,5	6	53,2
5G0,5	6,7	65,3
7G0,50	7,7	82,7
12G0,50	9,1	126,5
18G0,50	10,7	184,1
25G0,50	12,7	241,7
34G0,50	14,3	324,5
36G0,50	14,3	338,2
2x0,75	5,7	42,7
3G0,75	6,0	54
4G0,75	6,7	69,5
5G0,75	7,2	81,5
7G0,75	8,3	105,7
12G0,75	10,1	170,8
18G0,75	11,7	240,1
25G0,75	14,0	324,9
34G0,75	15,9	435,3
36G0,75	15,9	455,8
2x1	6,0	51,3
3G1	6,5	68
4G1	7,0	85,1
5G1	7,6	100,6
7G1	8,8	130
12G1	10,8	212,3

Sumcab reserves the right to modify these specifications with no prior notice.

## Sumflex® CP 2100

N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
18G1	12,7	306,2
25G1	15,2	409,7
34G1	17,10	548,3
36G1	17,10	574
2x1,5	6,8	65,7
3G1,5	7,1	85,3
4G1,5	7,7	106
5G1,5	8,4	127,6
7G1,5	10,0	167,5
12G1,5	12,0	275,5
18G1,5	14,1	402,9
25G1,5	17,1	549,8
34G1,5	19,3	736,2
36G1,5	19,3	772,3
2x2,5	8,1	91,8
3G2,5	8,6	122,1
4G2,5	9,6	153,8
5G2,5	10,4	193,1
7G2,5	12,3	254
12G2,5	15,1	420,8
18G2,5	17,8	615
25G2,5	22,0	842,4
2x4	9,8	135,2
3G4	10,4	188,4
4G4	11,4	238,7
5G4	12,6	289,3

## Power &amp; control

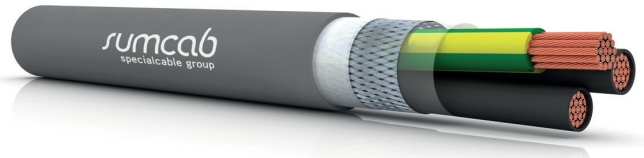
N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
7G4	14,9	394,6
2x6	11,3	186,8
3G6	12,0	424,5
4G6	13,4	519,2
5G6	14,7	639,2
6G6	16,2	732,3
7G6	17,6	799,2
2x10	14,5	320,5
3G10	15,6	443,2
4G10	17,2	578,3
5G10	19,1	702,9
6G10	21,3	868,3
7G10	23,2	983,4
3G16	18,2	635,5
4G16	20,7	835,6
5G16	22,8	1047,2
3G25	22,7	1212,1
4G25	25,0	1312,8
5G25	27,8	1617,8
3G35	25,5	1320,4

Sumcab reserves the right to modify these specifications with no prior notice.

## Sumflex® CP 2100C

Power & control

**Application:** Shielded power and control cable, extra flexible with PVC sheath, for use in cable chains with movement speed of up to 200 m/min. Flame retardant cable.



### Design

Conductor	Fine threads of bare copper, extra flexible, Class 6 according to EN 60228
Insulation	PVC
Identification	Black with white numbers, conductor yw/grn (G)
Cabling	In concentric layers with optimum feed-through cabling
Shielding	Tinned copper braid
Exterior sheath	PVC, grey colour RAL 7001

### Technical Details

Service voltage	300/500V
Test voltage	2.500V
Minimum bend radius	10 x outer diameter
Service temperature	-5°C to +80°C
Max. movement speed	200m/min.
Max. acceleration/ deceleration	15 m/s²
Max. horizontal movement	distance 10 m
Number of cycles:	Min. 1 mio. / Max. 10 mio. Depending on the exact application. For more information, contact your Sumcab technical sales manager.

### General features

IEC 60332-1-2	Flame retardant
IEC 60811-2-1	Resistance to oils and industrial greases

### Application markets

Tool Machine
Automation
Packaging
Food & Beverage
Chemical Industry
Pharmaceutical Industry
Glass and Ceramics Industry
Electronics Industry
Aeronautical Industry
Transport & Logistics



## Power &amp; control

N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
2x0,5	5,8	51,5
3G0,5	6	60,7
4G0,5	6,4	71
5G0,5	7,1	85,8
7G0,50	8,3	109,6
12G0,50	9,7	172,9
18G0,50	11,4	236,7
25G0,50	13,6	307,5
34G0,50	15,0	396
36G0,50	15,0	410,7
2x0,75	6,2	60,7
3G0,75	6,4	71,9
4G0,75	7,1	90
5G0,75	7,8	104,4
7G0,75	9,0	149,6
12G0,75	10,8	220,5
18G0,75	12,4	299,1
25G0,75	14,4	398,1
34G0,75	16,6	516,1
36G0,75	16,6	535,6
2x1	6,6	69,8
3G1	7,2	88,9
4G1	7,9	105,8
5G1	8,5	123,8
7G1	9,6	175,3
12G1	11,9	264,9

Sumcab reserves the right to modify these specifications with no prior notice.

## Sumflex® CP 2100C

N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
18G1	13,9	366,4
25G1	16,6	481,9
34G1	18,4	628,4
36G1	18,4	653,7
2x1,5	7,3	88
3G1,5	7,8	109
4G1,5	8,4	132,3
5G1,5	9,1	171
7G1,5	10,7	227,7
12G1,5	12,7	338,7
18G1,5	15,1	477,7
25G1,5	18,0	639,8
34G1,5	20,2	873,6
36G1,5	20,2	909,8
2x2,5	8,6	118,3
3G2,5	9,1	164,2
4G2,5	10,3	200
5G2,5	11,1	242,7
7G2,5	13,0	318,7
12G2,5	16,0	496,8
18G2,5	18,8	706,3
25G2,5	22,9	985,4
2x4	10,5	180,7
3G4	11,1	237
4G4	12,1	295,5
5G4	13,4	352,5

## Power &amp; control

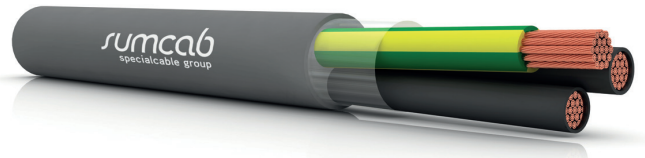
N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
7G4	15,7	474,2
2x6	12,0	241,9
3G6	12,7	314,8
4G6	14,3	391,4
5G6	15,6	478,8
7G6	18,5	649,4
2x10	15,4	384,5
3G10	16,5	508,1
4G10	18,1	648,9
5G10	20,0	819,1
7G10	23,9	1131,8
3G16	19,1	732
4G16	21,6	975,9
5G16	23,5	1199,2
3G25	23,4	1198,4
4G25	25,9	1572
5G25	28,7	1095
3G35	26,4	1537,6
4G35	29,3	1963,5
5G35	33,1	2463,2

Sumcab reserves the right to modify these specifications with no prior notice.

## Sumodrive® 510

Power & control

**Application:** Power and control cable, extra flexible with Thermoplastic polymer insulation and PUR sheath, for use in cable chains with movement speed of up to 250 m/min. UL & CSA certified. Halogen free and flame retardant cable.



### Design

Conductor	Fine threads of bare copper, extra flexible, Class 6 according to EN 60228
Insulation	Thermoplastic polymer
Identification	Black with white numbers, conductor yw/grn
Cabling	In concentric layers with optimum feed-through cabling
Exterior sheath	PUR, grey colour RAL 7001

### Technical Details

Service voltage	600V
Test voltage	4000V
Minimum bend radius	7.5 x outer diameter
Service temperature	-25°C to +80°C
Max. movement speed	250 m/min.
Max. acceleration/ deceleration	30 m/s <sup>2</sup>
Max. horizontal movement	distance 25 m
Number of cycles:	Min. 1 mio. / Max. 10 mio. Depending on the exact application. For more information, contact your Sumcab technical sales manager.

### General features

UL & CSA	Certification for USA and Canada
UL FT2	Flame retardant
HD 22.10	Resistance to oils and industrial greases
EN 60754-1	Halogen free
Other features	Good resistance to acids, alkaline solutions, solvents, hydraulic liquids, etc.
	Resistant to abrasion and cuts
	Outer sheath with low-adherence surface
	Excellent resistance to moisture

### Application markets

Tool Machine
Automation
Packaging
Food & Beverage
Chemical Industry
Pharmaceutical Industry
Glass and Ceramics Industry
Electronics Industry
Aeronautical Industry
Transport & Logistics



## Power &amp; control

Code	N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
155600020160100	2x0,50	5,6	35,6
155600030160100	3G0,50	5,8	42,7
155600040160100	4G0,50	6,2	51
155600050160100	5G0,50	6,7	59,4
155600070160100	7G0,50	7,6	73,4
155600120160100	12G0,50	8,9	111,9
155600180160100	18G0,50	10,3	159,4
155600250160100	25G0,50	12,2	209
155600340160100	34G0,50	13,7	277,5
155600360160100	36G0,50	13,7	288,8
155600020180100	2x0,75	6,2	44,8
155600030180100	3G0,75	6,5	55,3
155600040180100	4G0,75	6,9	65,4
155600050180100	5G0,75	7,5	78,1
155600070180100	7G0,75	8,6	98,5
155600120180100	12G0,75	10,3	158,7
155600180180100	18G0,75	11,8	219,5
155600250180100	25G0,75	14,2	296,9
155600360180100	36G0,75	15,8	405,7
155600020190100	2x1	6,6	52,4
155600030190100	3G1	6,9	64,9
155600040190100	4G1	7,4	79,2
155600050190100	5G1	8	93,5
155600070190100	7G1	9,2	120,4
155600120190100	12G1	11,1	194,6
155600180190100	18G1	13	277,8

Sumcab reserves the right to modify these specifications with no prior notice.

## Sumodrive® 510

Code	N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
155600250190100	25G1	15,5	370,1
155600340190100	34G1	17,4	493,1
155600360190100	36G1	17,4	515,7
155600020200100	2x1,5	7,3	66,4
155600030200100	3G1,5	7,7	86,5
155600040200100	4G1,5	8,3	106,1
155600050200100	5G1,5	8,9	124,8
155600070200100	7G1,5	10,3	164,3
155600120200100	12G1,5	12,6	268,5
155600180200100	18G1,5	14,5	388,1
155600250200100	25G1,5	17,5	525,4
155600340200100	34G1,5	19,9	703,1
155600360200100	36G1,5	19,9	737
155600020220100	2x2,5	8,7	92,1
155600030220100	3G2,5	9,2	121
155600040220100	4G2,5	10,2	153,2
155600050220100	5G2,5	11,1	188,5
155600070220100	7G2,5	13,2	248,7
155600120220100	12G2,5	16,1	407,2
155600180220100	18G2,5	18,7	594,6
155600250220100	25G2,5	22,8	809,6
155600340220100	34G2,5	25,7	1085,5
155600360220100	36G2,5	25,7	1139,6
155600030230100	3G4	10,5	177,6
155600040230100	4G4	11,4	225,1
155600050230100	5G4	12,4	270,9



## Power &amp; control

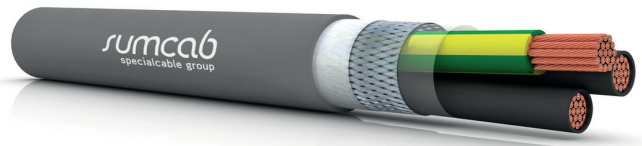
Code	N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
155600060230100	6G4	13,7	327,4
155600070230100	7G4	14,8	369,2
155600030240100	3G6	12,4	421,8
155600040240100	4G6	13,8	504,9
155600050240100	5G6	15,1	621,1
155600060240100	6G6	16,6	714,1
155600070240100	7G6	18	777
155600030250100	3G10	15,6	409,5
155600040250100	4G10	17,3	532,3
155600050250100	5G10	19,3	650,8
155600060250100	6G10	21	776,9
155600070250100	7G10	23	882
155600030260100	3G16	18,2	599,7
155600040260100	4G16	20,2	776,7
155600050260100	5G16	22,4	963,1

Sumcab reserves the right to modify these specifications with no prior notice.

## Sumodrive® 510C

Power & control

**Application:** Shielded power and control cable, extra flexible with Thermoplastic polymer insulation and PUR sheath, for use in cable chains with movement speed of up to 250 m/min. UL & CSA certified. Halogen free and flame retardant cable.



### Design

Conductor	Fine threads of bare copper, extra flexible, Class 6 according to EN 60228
Insulation	Thermoplastic polymer
Identification	Black with white numbers, conductor yw/grn
Cabling	In concentric layers with optimum feed-through cabling
Shielding	Tinned copper braid
Exterior sheath	PUR, grey colour RAL 7001

### Technical Details

Service voltage	600V
Test voltage	4000V
Minimum bend radius	7.5 x outer diameter
Service temperature	-25°C to +80°C
Max. movement speed	250m/min.
Max. acceleration/ deceleration	30 m/s <sup>2</sup>
Max. horizontal movement	distance 25 m
Number of cycles:	Min. 1 mio. / Max. 10 mio. Depending on the exact application. For more information, contact your Sumcab technical sales manager.

### General features

UL & CSA	Certification for USA and Canada
UL FT2	Flame retardant
HD 22.10	Resistance to oils and industrial greases
EN 60754-1	Halogen free
Other features	Good resistance to acids, alkaline solutions, solvents, hydraulic liquids, etc.
	Resistant to abrasion and cuts
	Outer sheath with low-adherence surface
	Excellent resistance to moisture

### Application markets

Tool Machine
Automation
Packaging
Food & Beverage
Chemical Industry
Pharmaceutical Industry
Glass and Ceramics Industry
Electronics Industry
Aeronautical Industry
Transport & Logistics





## Power &amp; control

Code	N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
155700020160100	2x0,50	6,1	50,7
155700030160100	3G0,50	6,3	59
155700040160100	4G0,50	6,7	68,8
155700050160100	5G0,50	7,1	78,2
155700070160100	7G0,50	8,2	98
155700120160100	12G0,50	9,6	154,3
155700180160100	18G0,50	11,1	208,9
155700250160100	25G0,50	12,9	267,8
155700340160100	34G0,50	14,6	344,8
155700360160100	36G0,50	14,6	356,1
155700020180100	2x0,75	6,7	62,5
155700030180100	3G0,75	6,9	72,9
155700040180100	4G0,75	7,4	85,9
155700050180100	5G0,75	8,1	99,5
155700070180100	7G0,75	9,2	127,7
155700120180100	12G0,75	11	205,9
155700180180100	18G0,75	12,6	278,3
155700250180100	25G0,75	15,2	366,6
155700340180100	34G0,75	16,7	466,9
155700360180100	36G0,75	16,7	485,1
155700020190100	2x1	7,1	71,6
155700030190100	3G1	7,4	85,3
155700040190100	4G1	8,1	101,2
155700050190100	5G1	8,6	119,1
155700070190100	7G1	9,9	167,3
155700120190100	12G1	11,9	248,3

Sumcab reserves the right to modify these specifications with no prior notice.

## Sumodrive® 510C

Code	N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
155700180190100	18G1	13,8	342,3
155700250190100	25G1	16,4	446,5
155700340190100	34G1	18,3	580,8
155700360190100	36G1	18,3	603,4
155700020200100	2x1,5	7,8	89,3
155700030200100	3G1,5	8,1	108,1
155700040200100	4G1,5	8,8	130,2
155700050200100	5G1,5	9,6	167,3
155700070200100	7G1,5	11,2	220,7
155700120200100	12G1,5	13,2	328,6
155700180200100	18G1,5	15,5	459
155700250200100	25G1,5	18,4	614,2
155700340200100	34G1,5	20,7	835,1
155700360200100	36G1,5	20,7	868,9
155700020220100	2x2,5	9,2	119
155700030220100	3G2,5	9,7	162,2
155700040220100	4G2,5	10,9	197,5
155700050220100	5G2,5	11,8	237,1
155700070220100	7G2,5	13,9	313,2
155700120220100	12G2,5	17	482,4
155700180220100	18G2,5	19,7	680,9
155700250220100	25G2,5	23,7	951
155700030230100	3G4	11,2	224,7
155700040230100	4G4	12,1	276,2
155700050230100	5G4	13,2	329,7
155700060230100	6G4	14,6	389,2



## Power &amp; control

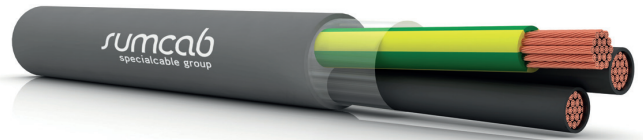
Code	N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
155700070230100	7G4	15,8	442,8
155700030240100	3G6	13,1	302,5
155700040240100	4G6	14,7	376
155700050240100	5G6	16	459,5
155700060240100	6G6	17,3	536,7
155700070240100	7G6	18,9	619,9
155700030250100	3G10	16,5	471,1
155700040250100	4G10	18,3	599,9
155700050250100	5G10	20,2	722,2
155700060250100	6G10	21,9	892,5
155700070250100	7G10	23,8	1019,3
155700030260100	3G16	19,1	683,6
155700040260100	4G16	21,1	902
155700050260100	5G16	23,3	1103,8

Sumcab reserves the right to modify these specifications with no prior notice.

## Sumodrive® 520

Power & control

**Application:** Power and control cable, extra flexible with TPE-E insulation and PUR sheath, for use in cable chains with movement speed of up to 300m/min. UL & CSA certified. Halogen free and flame retardant cable.



### Design

Conductor	Fine threads of bare copper, extra flexible, Class 6 according to EN 60228
Insulation	TPE-E
Identification	Black with white numbers, conductor yw/grn
Cabling	In concentric layers with optimum feed-through cabling
Exterior sheath	PUR, grey colour RAL 7001

### Technical Details

Service voltage	600V
Test voltage	4000V
Minimum bend radius	5 x outer diameter
Service temperature	-40°C a +80°C
Max. movement speed	300 m/min.
Max. acceleration/ deceleration	40 m/s <sup>2</sup>
Max. horizontal movement	max. 100m
Number of cycles:	Min. 1 mio. / Max. 10 mio. Depending on the exact application. For more information, contact your Sumcab technical sales manager.

### General features

UL & CSA	Certification for USA and Canada
UL FT2	Flame retardant
HD 22.10	Resistance to oils and industrial greases
EN 60754-1	Halogen free
Other features	Good resistance to acids, alkaline solutions, solvents, hydraulic liquids, etc.
	Resistant to abrasion and cuts
	Outer sheath with low-adherence surface
	Excellent resistance to moisture

### Application markets

Tool Machine
Automation
Packaging
Food & Beverage
Chemical Industry
Pharmaceutical Industry
Glass and Ceramics Industry
Electronics Industry
Aeronautical Industry
Transport & Logistics



## Power &amp; control

Code	N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
155800020160100	2x0,50	5,6	32,8
155800030160100	3G0,50	5,8	39,9
155800040160100	4G0,50	6,2	48,2
155800050160100	5G0,50	6,7	56,3
155800070160100	7G0,50	7,6	70,5
155800120160100	12G0,50	8,9	108,8
155800180160100	18G0,50	10,3	155,8
155800250160100	25G0,50	12,2	205,6
155800340160100	34G0,50	13,7	273,9
155800360160100	36G0,50	13,7	285,5
155800020180100	2x0,75	6,2	41,7
155800030180100	3G0,75	6,5	52,2
155800040180100	4G0,75	6,9	62,5
155800050180100	5G0,75	7,5	74,8
155800070180100	7G0,75	8,6	95,5
155800120180100	12G0,75	10,3	154,8
155800180180100	18G0,75	11,8	216,2
155800250180100	25G0,75	14,2	293,3
155800340180100	34G0,75	15,8	384,8
155800360180100	36G0,75	15,8	403,5
155800020190100	2x1	6,6	49,1
155800030190100	3G1	6,9	61,7
155800040190100	4G1	7,4	76
155800050190100	5G1	8	90,1
155800070190100	7G1	9,2	117,2
155800120190100	12G1	11,1	190,6

Sumcab reserves the right to modify these specifications with no prior notice.

## Sumodrive® 520

Code	N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
155800180190100	18G1	13	273,6
155800250190100	25G1	15,5	366,3
155800340190100	34G1	17,4	489,5
155800360190100	36G1	17,4	512,8
155800020200100	2x1,5	7,3	62,8
155800030200100	3G1,5	7,7	83
155800040200100	4G1,5	8,3	102,6
155800050200100	5G1,5	8,9	121,3
155800070200100	7G1,5	10,3	160,9
155800120200100	12G1,5	12,6	264,4
155800180200100	18G1,5	14,5	384
155800250200100	25G1,5	17,5	521,4
155800340200100	34G1,5	19,9	699,4
155800360200100	36G1,5	19,9	734
155800020220100	2x2,5	8,7	88
155800030220100	3G2,5	9,2	117,1
155800040220100	4G2,5	10,2	149,1
155800050220100	5G2,5	11,1	183,9
155800070220100	7G2,5	13,2	244,3
155800120220100	12G2,5	16,1	402,2
155800180220100	18G2,5	18,7	589,3
155800250220100	25G2,5	22,8	804,5
155800340220100	34G2,5	25,7	1080,7
155800360220100	36G2,5	25,7	1135,8
155800030230100	3G4	10,5	172,7
155800040230100	4G4	11,4	220,1



## Power &amp; control

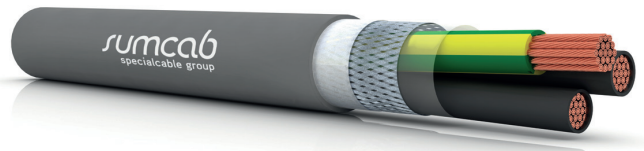
Code	N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
155800050230100	5G4	12,4	266
155800060230100	6G4	13,7	321,3
155800070230100	7G4	14,8	363,7
155800030240100	3G6	12,4	392,7
155800040240100	4G6	13,8	473,9
155800050240100	5G6	15,1	583,5
155800060240100	6G6	16,6	673,3
155800070240100	7G6	18	737,1
155800030250100	3G10	15,6	401,4
155800040250100	4G10	17,3	523,4
155800050250100	5G10	19,3	641,6
155800060250100	6G10	21	766,4
155800070250100	7G10	23	873,1
155800030260100	3G16	18,2	591,2
155800040260100	4G16	20,2	768,6
155800050260100	5G16	22,4	953,8

Sumcab reserves the right to modify these specifications with no prior notice.

## Sumodrive® 520C

Power & control

**Application:** Power and control cable, shielded, extra flexible with TPE-E insulation and PUR sheath, for use in cable chains with movement speed of up to 300 m/min. UL & CSA certified. Halogen free and flame retardant cable.



### Design

Conductor	Fine threads of bare copper, extra flexible, Class 6 according to EN 60228
Insulation	TPE-E
Identification	Black with white numbers, conductor yw/grn
Cabling	In concentric layers with optimum feed-through cabling
Shielding	Tinned copper braid
Exterior sheath	PUR, grey colour RAL 7001

### Technical Details

Service voltage	600V
Test voltage	4000V
Minimum bend radius	7.5 x outer diameter
Service temperature	-40°C to +80°C
Max. movement speed	300m/min.
Max. acceleration/ deceleration	40 m/s <sup>2</sup>
Max. horizontal movement	distance 100 m
Number of cycles:	Min. 1 mio. / Max. 10 mio. Depending on the exact application. For more information, contact your Sumcab technical sales manager.

### General features

UL & CSA	Certification for USA and Canada
UL FT2	Flame retardant
HD 22.10	Resistance to oils and industrial greases
EN 60754-1	Halogen free
Other features	Good resistance to acids, alkaline solutions, solvents, hydraulic liquids, etc.
	Resistant to abrasion and cuts
	Outer sheath with low-adherence surface
	Excellent resistance to moisture

### Application markets

Tool Machine
Automation
Packaging
Food & Beverage
Chemical Industry
Pharmaceutical Industry
Glass and Ceramics Industry
Electronics Industry
Aeronautical Industry
Transport & Logistics





## Power &amp; control

Code	N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
155900020160100	2x0,50	6,1	47,1
155900030160100	3G0,50	6,3	55,4
155900040160100	4G0,50	6,7	65
155900050160100	5G0,50	7,1	76,3
155900070160100	7G0,50	8,2	93,8
155900120160100	12G0,50	9,6	149,3
155900180160100	18G0,50	11,1	203,2
155900250160100	25G0,50	12,9	262
155900340160100	34G0,50	14,6	338,4
155900360160100	36G0,50	14,6	350
155900020180100	2x0,75	6,7	58,6
155900030180100	3G0,75	6,9	69,1
155900040180100	4G0,75	7,4	81,9
155900050180100	5G0,75	8,1	95,4
155900070180100	7G0,75	9,2	123,1
155900120180100	12G0,75	11	200,3
155900180180100	18G0,75	12,6	272,5
155900250180100	25G0,75	15,2	360,2
155900340180100	34G0,75	16,7	461
155900360180100	36G0,75	16,7	479,7
155900020190100	2x1	7,1	67,3
155900030190100	3G1	7,4	81,1
155900040190100	4G1	8,1	96,9
155900050190100	5G1	8,6	114,6
155900070190100	7G1	9,9	161,8
155900120190100	12G1	11,9	242,1

Sumcab reserves the right to modify these specifications with no prior notice.

## Sumodrive® 520C

Code	N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
155900180190100	18G1	13,8	335,5
155900250190100	25G1	16,4	439,7
155900340190100	34G1	18,3	573,7
155900360190100	36G1	18,3	596,9
155900020200100	2x1,5	7,8	84,7
155900030200100	3G1,5	8,1	103,7
155900040200100	4G1,5	8,8	125,7
155900050200100	5G1,5	9,6	162
155900070200100	7G1,5	11,2	214,4
155900120200100	12G1,5	13,2	322,4
155900180200100	18G1,5	15,5	452,4
155900250200100	25G1,5	18,4	606,7
155900340200100	34G1,5	20,7	826,7
155900360200100	36G1,5	20,7	861,4
155900020220100	2x2,5	9,2	113,7
155900030220100	3G2,5	9,7	156,6
155900040220100	4G2,5	10,9	191,8
155900050220100	5G2,5	11,8	230,6
155900070220100	7G2,5	13,9	305,9
155900120220100	12G2,5	17	474,4
155900180220100	18G2,5	19,7	672,6
155900250220100	25G2,5	23,7	940,6
155900340220100	34G2,5	26,6	1234,3
155900360220100	36G2,5	26,6	1289,5
155900030230100	3G4	11,2	217,8
155900040230100	4G4	12,1	269,3



## Power &amp; control

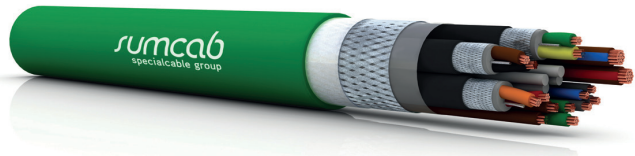
Code	N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
155900050230100	5G4	13,2	322,4
155900060230100	6G4	14,6	380,8
155900070230100	7G4	15,8	434,1
155900030240100	3G6	13,1	294,8
155900040240100	4G6	14,7	368,2
155900050240100	5G6	16,0	450,5
155900060240100	6G6	17,3	527,3
155900070240100	7G6	18,9	609,3
155900030250100	3G10	16,5	461,7
155900040250100	4G10	18,3	589,7
155900050250100	5G10	20,2	712,1
155900060250100	6G10	21,9	879,5
155900070250100	7G10	23,8	1006,3
155900030260100	3G16	19,1	672,2
155900040260100	4G16	21,1	889,4
155900050260100	5G16	23,3	1089,7

Sumcab reserves the right to modify these specifications with no prior notice.

## Sumodrive® 710C

Encoder & Resolver for Servo

**Application:** Servomotor control cable for Resolver, Encoder signals etc., extra flexible with Thermoplastic polymer insulation and PUR sheath, for use in cable chains with movement speed of up to 250m/min. UL & CSA certified. Halogen free and flame retardant cable.



### Design

Conductor	Fine threads of bare copper, extra flexible, Class 6 according to EN 60228
Insulation	Thermoplastic polymer
Identification	According to system, consult
Cabling	According to system, consult
Shielding	Tinned copper braid
Exterior sheath	PUR, green colour RAL 6018

### Technical Details

Service voltage	300V
Test voltage	2500V
Minimum bend radius	6 x outer diameter
Service temperature	-25°C to +80°C
Max. movement speed	250m/min.
Max. acceleration/ deceleration	30 m/s <sup>2</sup>
Max. horizontal movement	distance 25 m
Number of cycles:	Min. 1 mio. / Max. 10 mio. Depending on the exact application. For more information, contact your Sumcab technical sales manager.

### General features

UL & CSA	Certification for USA and Canada
UL FT2	Flame retardant
HD 22.10	Resistance to oils and industrial greases
EN 60754-1	Halogen free
Other features	Good resistance to acids, alkaline solutions, solvents, hydraulic liquids, etc.
	Resistant to abrasion and cuts
	Outer sheath with low-adherence surface
	Excellent resistance to moisture

### Application markets

Tool Machine
Automation
Packaging
Food & Beverage
Chemical Industry
Pharmaceutical Industry
Glass and Ceramics Industry
Electronics Industry
Aeronautical Industry
Transport & Logistics



## Encoder &amp; Resolver for Servo

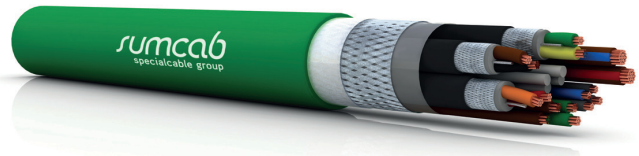
Code	N° of conductors x mm <sup>2</sup>	System	Outer diameter in mm
165000080060503	(9x0,50)	ENCODER INDRAMAT	8,5
165000080060504	(10x2x0,18)	ENCODER	9,7
165000080060506	(8x2x0,25)	ENCODER	8,6
165000080060505	[ 3x(2x0,14) + 1x2x0,50 + 1x4x0,14 + 1x4x0,23 ]	ENCODER SIEMENS	9,6
165000110060521	[ 3x(2x0,14) + 2x0,50 + 4x0,14 ]	RESOLVER SIEMENS	8,7
165000120060509	[ 3x(2x0,14) + 1x2x0,50 ]	RESOLVER	8,6
165000120060511	[ 3x(2x0,14) + 2x(0,50) ]	SIEMENS	8,8
165000120060502	[ 3x(2x0,14) + 2x1 ]	HEIDENHAIN	8,8
165000140060512	[ 3x(2x0,14) + 2x(1) ]	HEIDENHAIN	9,5
165000140060501	( 4x2x0,25+2x0,50 )	ENCODER INDRAMAT	8
165000150060519	( 4x2x0,38 + 4x0,50 )	ENCODER SIEMENS	8,9
165000160060515	( 5x2x0,14 + 2x0,50 )	BAUMULLER	8
165020100080500	( 4x2x0,25+2x1 )	ENCODER INDRAMAT	8,8
165000100120507	(10x0,14+2x0,50)	HEIDENHAIN	7,2
165000100120510	(10x0,14+4x0,50)	HEIDENHAIN	7,7
165020080120500	(2x2x0,34)	ENCODER YASKAWA	6,4
165000070130518	[ (2x0,34) + 6x2x0,34 + 1x2x1 ]	ENCODER CONTROL	10,8
165000080130517	[ (2x0,14) + 6x2x0,14 + 1x2x0,50 ]	ENCODER	8,8
165000160130514	[ 4x(2x0,34) ]	RESOLVER	11,2
165020020130513	(8x0,34)	RESOLVER	7
165020040130516	[ 5x0,34+1x2x0,18 ]	ENCODER	7,1
165000100150508	(6x2x0,14 + 2x0,50 + 1x0,50)	ENCODER BALDOR	8,9
165000070160520	[ (2x0,50) + 2x(2x0,14) + 1x0,50 ]	RESOLVER SSI BALDOR	7,8
165000090160500	[ 2x(2x0,14) + 2x0,50 + 2x2x0,14 + 1x0,50 ]	ENCODER	8,65

Sumcab reserves the right to modify these specifications with no prior notice.

## Sumodrive® 720C

Encoder & Resolver para Servo

**Application:** Servomotor control cable for Resolver, Encoder signals etc., extra flexible with TPE-E insulation and PUR sheath, for use in cable chains with movement speed of up to 300 m/min. UL & CSA certified. Halogen free and flame retardant cable.



### Design

Conductor	Fine threads of bare copper, extra flexible, Class 6 according to EN 60228
Insulation	TPE-E
Identification	According to system, consult
Cabling	According to system, consult
Shielding	Tinned copper braid
Exterior sheath	PUR, green colour RAL 6018

### Technical Details

Service voltage	300V
Test voltage	2500V
Minimum bend radius	6 x outer diameter
Service temperature	-40°C to +80°C
Max. movement speed	300m/min.
Max. acceleration/ deceleration	40 m/s <sup>2</sup>
Max. horizontal movement	distance 100 m
Number of cycles:	Min. 1 mio. / Max. 10 mio. Depending on the exact application. For more information, contact your Sumcab technical sales manager.

### General features

UL & CSA	Certification for USA and Canada
UL FT2	Flame retardant
HD 22.10	Resistance to oils and industrial greases
EN 60754-1	Halogen free
Other features	Good resistance to acids, alkaline solutions, solvents, hydraulic liquids, etc.
	Resistant to abrasion and cuts
	Outer sheath with low-adherence surface
	Excellent resistance to moisture

### Application markets

Tool Machine
Automation
Packaging
Food & Beverage
Chemical Industry
Pharmaceutical Industry
Glass and Ceramics Industry
Electronics Industry
Aeronautical Industry
Transport & Logistics



## Encoder &amp; Resolver for Servo

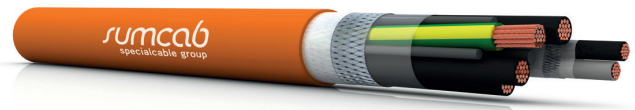
Code	N° of conductors x mm <sup>2</sup>	System	Outer diameter in mm
165100080060503	(9x0,50)	ENCODER INDRAMAT	8,5
165100080060504	(10x2x0,18)	ENCODER	9,7
165100080060506	(8x2x0,25)	ENCODER	8,6
165100080060505	[ 3x(2x0,14) + 1x2x0,50 + 1x4x0,14 + 1x4x0,23 ]	ENCODER SIEMENS	9,6
165100110060521	[ 3x(2x0,14) + 2x0,50 + 4x0,14 ]	RESOLVER SIEMENS	8,7
165100120060509	[ 3x(2x0,14) + 1x2x0,50 ]	RESOLVER	8,6
165100120060511	[ 3x(2x0,14) + 2x(0,50) ]	SIEMENS	8,8
165100120060502	[ 3x(2x0,14) + 2x1 ]	HEIDENHAIN	8,8
165100140060512	[ 3x(2x0,14) + 2x(1) ]	HEIDENHAIN	9,5
165100140060501	( 4x2x0,25+2x0,50 )	ENCODER INDRAMAT	8
165100150060519	( 4x2x0,38 + 4x0,50 )	ENCODER SIEMENS	8,9
165100160060515	( 5x2x0,14 + 2x0,50 )	BAUMULLER	8
165120100080500	( 4x2x0,25+2x1 )	ENCODER INDRAMAT	8,8
165100100120507	(10x0,14+2x0,50)	HEIDENHAIN	7,2
165100100120510	(10x0,14+4x0,50)	HEIDENHAIN	7,7
165120080120500	(2x2x0,34)	ENCODER YASKAWA	6,4
165100070130518	[ (2x0,34) + 6x2x0,34 + 1x2x1 ]	ENCODER CONTROL	10,8
165100080130517	[ (2x0,14) + 6x2x0,14 + 1x2x0,50 ]	ENCODER	8,8
165100160130514	[ 4x(2x0,34) ]	RESOLVER	11,2
165120020130513	(8x0,34)	RESOLVER	7
165120040130516	[ 5x0,34+1x2x0,18 ]	ENCODER	7,1
165100100150508	(6x2x0,14 + 2x0,50 + 1x0,50)	ENCODER BALDOR	8,9
165100070160520	[ (2x0,50) + 2x(2x0,14) + 1x0,50 ]	RESOLVER SSI BALDOR	7,8
165100090160500	[ 2x(2x0,14) + 2x0,50 + 2x2x0,14+ 1x0,50 ]	ENCODER	8,65

Sumcab reserves the right to modify these specifications with no prior notice.

## Sumodrive® 910C

Power for Servo

**Application:** Servomotor power and cable, extra flexible with Thermoplastic polymer insulation and PUR sheath, for use in cable chains with movement speed of up to 250m/min. UL & CSA certified. Halogen free and flame retardant cable.



### Design

Conductor	Fine threads of bare copper, extra flexible, Class 6 according to EN 60228
Insulation	Thermoplastic polymer
Identification	According to system, consult
Cabling	In concentric layers with optimum feed-through cabling
Shielding	Tinned copper braid
Exterior sheath	PUR, orange colour RAL2003

### Technical Details

Service voltage	600/1000V
Test voltage	4000V
Minimum bend radius	7.5 x outer diameter
Service temperature	-25°C to +80°C
Max. movement speed	250m/min.
Max. acceleration/ deceleration	30 m/s <sup>2</sup>
Max. horizontal movement	distance 25 m
Number of cycles:	Min. 1 mio. / Max. 10 mio. Depending on the exact application. For more information, contact your Sumcab technical sales manager.

### General features

UL & CSA	Certification for USA and Canada
UL FT2	Flame retardant
HD 22.10	Resistance to oils and industrial greases
EN 60754-1	Halogen free
Other features	Good resistance to acids, alkaline solutions, solvents, hydraulic liquids, etc.
	Resistant to abrasion and cuts
	Outer sheath with low-adherence surface
	Excellent resistance to moisture

### Application markets

Máquina Herramienta
Automation
Packaging
Food & Beverage
Industria Química
Industria Farmacéutica
Industria del Cristal y la Cerámica
Industria Electrónica
Industria Aeronautica
Transport & Logistics





## Power for Servo

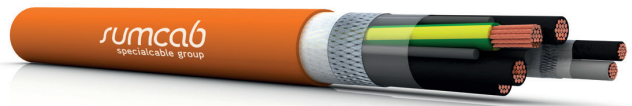
Code	N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
165200040190903	4G1	8	94
165200040190900	4G1,5	8,6	125
165200040200901	4G2,5	11	197
165200040200902	4G4	12,1	270
165200040200903	4G6	14,5	375
165200040200900	4G10	18,5	583
165200040220901	4G16	21,5	855
165200040220902	4G25	26,5	1350
165200040220903	4G35	30,1	1846
165200040220900	4G50	35,3	2581
165200040230901	4 G 1,5 + (2 x 1)	10,6	223
165200040230904	4 G 2,5 + (2 x 1)	12,6	276
165200040230902	4 G 4 + (2 x 1)	13,6	356
165200040230900	4 G 6 + (2 x 1)	16	455
165200040240901	4 G 10 + (2 x 1)	19,5	666
165200040240904	4 G 1,5 + (2 x 1,5)	11,3	232
165200040240902	4 G 2,5 + (2 x 1,5)	13,1	286
165200040240900	4 G 4 + (2 x 1,5)	14,1	358
165200040250901	4 G 6 + (2 x 1,5)	16	457
165200040250904	4 G 10 + (2 x 1,5)	19,8	668
165200040250902	4 G 16 + (2 x 1,5)	22,6	904
165200040250900	4 G 25 + (2 x 1,5)	27,3	1404
165200040260902	4 G 35 + (2 x 1,5)	30,7	1859
165200040260905	4 G 50 + (2 x 1,5)	35,3	2569
165200040260900	4 G 1 + 2 x (2 x 0,75)	11,4	256
165200040270902	4 G 1,5 + 2 x (2 x 0,75)	11,6	278
165200040270905	4 G 2,5 + 2 x (2 x 0,75)	14	363
165200040270900	4 G 4 + (2 x 1,5) + (2 x 1)	15,7	466
165200040300902	4 G 6 + (2 x 1,5) + (2 x 1)	17,5	567
165200040300905	4 G 10 + (2 x 1,5) + (2 x 1)	20,8	805
165200040300900	4 G 16 + 2 x (2 x 1,5)	23,5	1105
165200040340902	4 G 25 + 2 x (2 x 1,5)	27,8	1588
165200040340905	4 G 35 + 2 x (2 x 1,5)	30,7	2053
165200040340900	4 G 50 + 2 x (2 x 1,5)	35,3	2749

Sumcab reserves the right to modify these specifications with no prior notice.

## Sumodrive® 920C

Power for Servo

**Application:** Servomotor power and cable, extra flexible with TPE-E insulation and PUR sheath, for use in cable chains with movement speed of up to 300m/min. UL & CSA certified. Halogen free and flame retardant cable.



### Design

Conductor	Fine threads of bare copper, extra flexible, Class 6 according to EN 60228
Insulation	TPE-E
Identification	According to system, consult
Cabling	In concentric layers with optimum feed-through cabling
Shielding	Tinned copper braid
Exterior sheath	PUR, orange colour RAL2003

### Technical Details

Service voltage	600/1000V
Test voltage	4000V
Minimum bend radius	7.5 x outer diameter
Service temperature	-40°C to +80°C
Max. movement speed	300m/min.
Max. acceleration/ deceleration	40 m/s <sup>2</sup>
Max. horizontal movement	distance 100 m
Number of cycles:	Min. 1 mio. / Max. 10 mio. Depending on the exact application. For more information, contact your Sumcab technical sales manager.

### General features

UL & CSA	Certification for USA and Canada
UL FT2	Flame retardant
HD 22.10	Resistance to oils and industrial greases
EN 60754-1	Halogen free
Other features	Good resistance to acids, alkaline solutions, solvents, hydraulic liquids, etc.
	Resistant to abrasion and cuts
	Outer sheath with low-adherence surface
	Excellent resistance to moisture

### Application markets

Tool Machine
Automation
Packaging
Food & Beverage
Chemical Industry
Pharmaceutical Industry
Glass and Ceramics Industry
Electronics Industry
Aeronautical Industry
Transport & Logistics



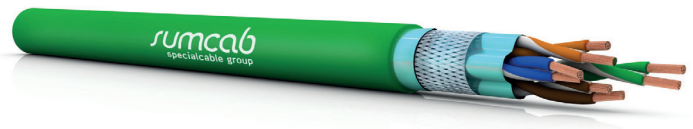
## Power for Servo

Code	N° of conductors x mm <sup>2</sup>	Outer diameter in mm	Weight kg/km
165300040190903	4G1	8	94
165300040190900	4G1,5	8,6	125
165300040200901	4G2,5	11	197
165300040200902	4G4	12,1	270
165300040200903	4G6	14,5	375
165300040200900	4G10	18,5	583
165300040220901	4G16	21,5	855
165300040220902	4G25	26,5	1350
165300040220903	4G35	30,1	1846
165300040220900	4G50	35,3	2581
165300040230901	4 G 1,5 + (2 x 1)	10,6	223
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165300040230902	4 G 4 + (2 x 1)	13,6	356
165300040230900	4 G 6 + (2 x 1)	16	455
165300040240901	4 G 10 + (2 x 1)	19,5	666
165300040240904	4 G 1,5 + (2 x 1,5)	11,3	232
165300040240902	4 G 2,5 + (2 x 1,5)	13,1	286
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165300040260902	4 G 35 + (2 x 1,5)	30,7	1859
165300040260905	4 G 50 + (2 x 1,5)	35,3	2569
165300040260900	4 G 1 + 2 x (2 x 0,75)	11,4	256
165300040270902	4 G 1,5 + 2 x (2 x 0,75)	11,6	278
165300040270905	4 G 2,5 + 2 x (2 x 0,75)	14	363
165300040270900	4 G 4 + (2 x 1,5) + (2 x 1)	15,7	466
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165300040340902	4 G 25 + 2 x (2 x 1,5)	27,8	1588
165300040340905	4 G 35 + 2 x (2 x 1,5)	30,7	2053
165300040340900	4 G 50 + 2 x (2 x 1,5)	35,3	2749

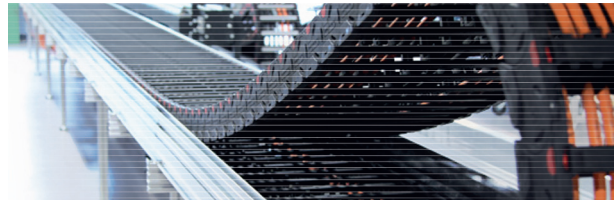
Sumcab reserves the right to modify these specifications with no prior notice.

## Industry 4.0

One of the most important challenges for companies nowadays is greater orientation towards the demands of their customers, higher productive flexibility and reduced production costs. The response to these challenges is found in the fourth industrial revolution or Industry 4.0.



The “intelligent factories” are based on the computerisation of all levels of the chain of value. All of the production processes are computerised, monitored, connected and interact together from the cloud following the concept of the Internet of Things (IOT).



This generates an enormous volume of data and the need to avail of reliable measurement systems in the case of any type of movement/change.

To respond to these needs, SUMCAB offers a wide range of Ethernet cables in Cat.5e and Cat.6 for cable chains and robotics.

**Sumcab - The most reliable solution for applications with a high volume of data transmission.**



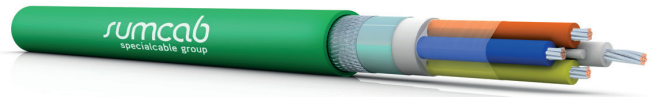
Industry 4.0



Communication

## Profinet Sumline 4.0 PNP-C5

**Application:** Profinet cable EN 50173-3 & ISO/IEC 24702, extra flexible, for use in cable chains with movement speed of up to 180m/min. Halogen free and flame retardant cable.



Design

Conductor	Fine threads of copper
Insulation	Polyethylene
Identification	Blue-white & orange-yellow
Cabling	Quad
Shielding	Tape of Alu/Pet, with shielding of tinned copper braid, coverage of 85%
Exterior sheath	Polyurethane, green colour

Technical Details

Impedance (f=100MHz)	100 Ohm +/-5 Ohm
Bandwidth	1-100 MHz
Minimum bend radius	8 x diámetro exterior
Service temperature	-20°C a +80°C
Max. movement speed	180m/min.
Max. acceleration/ deceleration	5m/s
Max. horizontal movement	25m
Number of cycles:	Min. 1 mio. / Max. 10 mio. Depending on the exact application. For more information, contact your Sumcab technical sales manager.

General features

IEC 60332-1-2	Flame retardant
IEC 60811-2-1	Resistance to oils and industrial greases
IEC 60754-1	Halogen free

Application markets

Tool Machine
Automation
Packaging
Food & Beverage
Chemical Industry
Pharmaceutical Industry
Glass and Ceramics Industry
Electronics Industry
Aeronautical Industry
Transport & Logistics

Nº. of pairs x AWG	Outer diameter in mm	Weight kg/km
2 x 2 x 22	6,8	60

Sumcab reserves the right to modify these specifications with no prior notice.



Communication

## Ethernet Industrial Sumline 4.0 EIP-C5

**Application:** Ethernet Industrial Cable, Cat.5e, extra flexible, for use in cable chains with movement speed of up to 180m/min. Halogen free and flame retardant cable.



Design

Conductor	Fine threads of copper (AWG26/19)
Insulation	Thermoplastic polymer
Identification	white/blue-blue, white/orange-orange, white/green-green, white/brown-brown
Cabling	4 pairs in the set with fillings
Shielding	Shielding of tinned copper braid, coverage of 90%
Exterior sheath	Polyurethane, green colour

Technical Details

Impedance (f=100MHz)	100 Ohm +/-5 Ohm
Bandwidth	1-100 MHz
Minimum bend radius	8 x outer diameter
Service temperature	-20°C to +80°C
Max. movement speed	180m/min.
Max. acceleration/ deceleration	5 m/s
Max. horizontal movement	25 m
Number of cycles:	Min. 1 mio. / Max. 10 mio. Depending on the exact application. For more information, contact your Sumcab technical sales manager.

General features

IEC 60332-1-2	Flame retardant
IEC 60811-2-1	Resistance to oils and industrial greases
IEC 60754-1	Halogen free

Application markets

Tool Machine
Automation
Packaging
Food & Beverage
Chemical Industry
Pharmaceutical Industry
Glass and Ceramics Industry
Electronics Industry
Aeronautical Industry
Transport & Logistics

N°. of pairs x AWG	Outer diameter in mm	Weight kg/km
4 x 2 x 26	6,9	54

Sumcab reserves the right to modify these specifications with no prior notice.

Communication

## Ethernet Industrial Sumline 4.0 EIP-C6-ES

**Application:** Easy to strip Ethernet Industrial Cable, Cat.6A, extra flexible, for use in cable chains with movement speed of up to 180m/min. Halogen free and flame retardant cable.



Design

Conductor	Fine threads of copper (AWG26/19)
Insulation	Thermoplastic polymer
Identification	white/blue-blue, white/orange-orange, white/green-green, white/brown-brown
Cabling	4 pairs with central star
Seating	Seating for easy stripping
Shielding	Tape of Alu/Pet, with shielding of tinned copper braid, coverage of 90%
Exterior sheath	Polyurethane, green colour

Technical Details

Impedance (f=100MHz)	100 Ohm +/-5 Ohm
Bandwidth	1-250 MHz
Minimum bend radius	12.5 x outer diameter
Service temperature	-20°C to +80°C
Max. movement speed	180m/min.
Max. acceleration/ deceleration	4 m/s
Max. horizontal movement	10 m
Number of cycles:	Min. 1 mio. / Max. 10 mio. Depending on the exact application. For more information, contact your Sumcab technical sales manager.

General features

IEC 60332-1-2	Flame retardant
IEC 60811-2-1	Resistance to oils and industrial greases
IEC 60754-1	Halogen free

Application markets

Tool Machine
Automation
Packaging
Food & Beverage
Chemical Industry
Pharmaceutical Industry
Glass and Ceramics Industry
Electronics Industry
Aeronautical Industry
Transport & Logistics

N°. of pairs x AWG	Outer diameter in mm	Weight kg/km
4 x 2 x 26	7,2	65

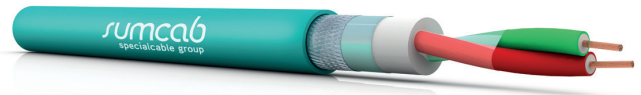
Sumcab reserves the right to modify these specifications with no prior notice.



Communication

## Profibus Sumline 4.0 PBP-C

**Application:** Profibus DP Cable, extra flexible, for use in cable chains with movement speed of up to 180m/min. Halogen free and flame retardant cable.



Design

Conductor	Fine threads of copper (AWG22/19)
Insulation	FPE
Identification	Red & green
Cabling	1 pair
Shielding	Tape of Alu/Pet, with shielding of tinned copper braid, coverage of 65%
Exterior sheath	Polyurethane, turquoise colour

Technical Details

Characteristic impedance	150 Ohm +/-15 Ohm
Capacitance to 1 KHz	28 nF/km
Minimum bend radius	8 x outer diameter
Service temperature	-20°C to +80°C
Max. movement speed	180m/min.
Max. acceleration/ deceleration	4 m/s
Max. horizontal movement	25 m
Number of cycles:	Min. 1 mio. / Max. 10 mio. Depending on the exact application. For more information, contact your Sumcab technical sales manager.

General features

IEC 60332-1-2	Flame retardant
IEC 60811-2-1	Resistance to oils and industrial greases
IEC 60754-1	Halogen free

Application markets

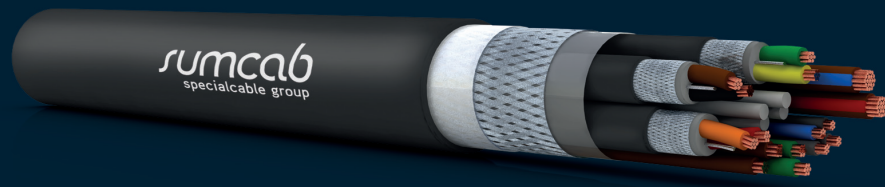
Tool Machine
Automation
Packaging
Food & Beverage
Chemical Industry
Pharmaceutical Industry
Glass and Ceramics Industry
Electronics Industry
Aeronautical Industry
Transport & Logistics

N°. of pairs x AWG	Outer diameter in mm	Weight kg/km
1 x 2 x 22	8,8	62

Sumcab reserves the right to modify these specifications with no prior notice.



## Cables for Industrial Robotics



## Cables for Industrial Robotics

According to the definition by the Association of Robotics Industries, “An industrial robot is a programmable, multi-functional manipulator, capable of moving materials, pieces, tools or special devices, depending on variable trajectories, programmed in order to carry out various tasks.”

Specifically in the industrial area, robotics can be applied to: tasks of smelting, welding, application of materials, sealants and adhesives, power for machinery, processing, cutting, assembly, palletising and quality control, among many others. Its success in these tasks is principally due to a series of advantages that make it the perfect option in industry: Productivity, Speed, Safety.

These continuous “mobile” applications require special cables with an excellent mechanical resistance. In industrial robotics applications, the continuous movements rapidly deteriorate conventional cabling.

The problem is that the majority of the cables are not designed for this type of movement (bending, traction and torsion) and suffer quick wear. The repeated bending causes “cold hardening” in the copper conductors to the point that they “fracture”. The copper threads that form the conductor in the cold state are stretched beyond the permitted plastic limit. When a conductor bends (curves) around a radius that is too small, it forces it to stretch more. This action changes the internal structure of the conductor, hardening it until it becomes fragile and finally fractures.

Similarly, the friction created by the internal elements of a cable in motion can generate enough heat to cause the cable insulation, shielding and/or sheath to fail. By internal elements we are referring to the different layers and parts in a cable, such as conductors, insulation, shields, protection tapes, outer sheath, etc.

# Sumflex Mechatronic

Guaranteed reliability and quality

Process automation machines are designed to operate at higher speeds than previous generations and are equipped with increasingly complex vision and control systems as well as a wide variety of sensors. This new operating environment requires more resistant and reliable cables.

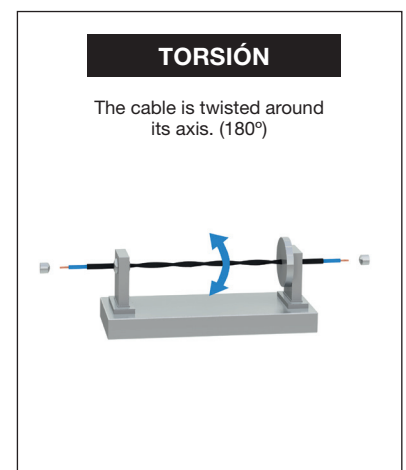
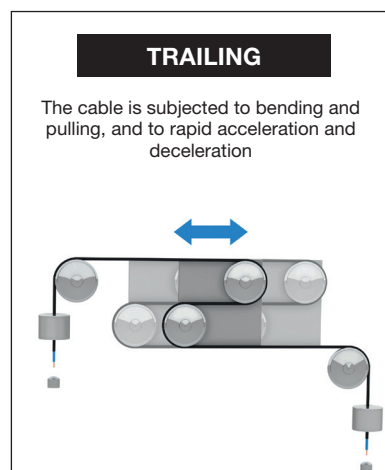
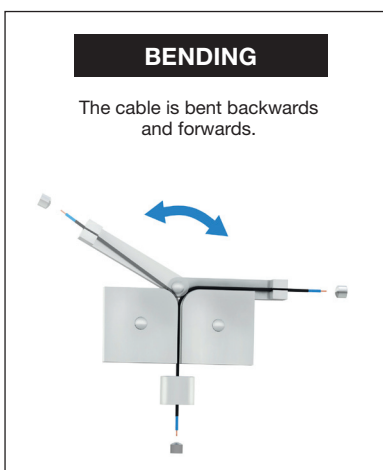
At Sumcab Tailor Made Cables we have created the Sumflex Mechatronic cable, compliant with the most stringent requirements for mechanical resistance, chemical aggression and thermal range. Designed to withstand millions of bending,

torsion and traction cycles, always with very small bending radii (up to  $5 \times d$ ). As well as being very resistant to a wide variety of additional environmental effects, such as variable temperatures, oils/greases and chemical products.

With the purpose of ensuring the reliability of our products, we avail of a technical laboratory with our own 3D trial system. This testing system allows us to test the cables with rapid accelerations and decelerations, as well as efforts of continuous traction, compression, bending and torsion.

## Testing example for Sumflex Mechatronic cables

During and after testing (up to 10 million cycles) the cable is monitored for damage or failure in any of its components.

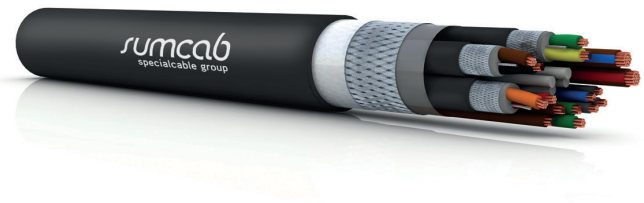


**Sumflex Mechatronic**  
The most advanced solution for industrial automation

Using the right cable impacts directly on automation equipment reliability. Understanding the causes of cable failure in applications of this nature enables us to take the appropriate measures during the design phase to increase the reliability of our clients' entire production systems.

## Sumflex® Mechatronic

**Application:** Power, control, signal or welding cables for articulated robot of 6 axes, specially designed for the movements of torsion, bending and traction. UL & CSA certified. Halogen free and flame retardant cables.



### General design

Conductor	Extra-fine threads of bare or tinned copper
Insulation	TPE-E, Sumtrel, PP
Identification	Customized
Cabling	Depending on the needs, in concentric layers with optimum feed-through cabling
Shields	Thin threads of tinned copper, applied in a spiral shape, min. coverage of 95%
Exterior sheath	PUR, black colour (other colours upon request)

### General features

UL & CSA	Certification for USA and Canada
UL FT2	Flame retardant
HD 22.10	Resistance to oils and industrial greases
EN 60754-1	Halogen free
Other features	Good resistance to acids, alkaline solutions, solvents, hydraulic liquids, etc.
	Resistant to abrasion and cuts
	Resistant to welding splatter
	Outer sheath with low-adherence surface
	Excellent resistance to moisture
	Totally silicone-free

### General technical details

Service voltage	300 y 600V
Test voltage	2000 y 4000V
Minimum bend radius	5 x outer diameter
Service temperature	-5°C to +80°C
Bending	+/-180°
Number of cycles:	Min. 1 mio. / Max. 10 mio. Depending on the exact application. For more information, contact your Sumcab technical sales manager.

### Application markets

Tool Machine
Automation
Packaging
Food & Beverage
Chemical Industry
Pharmaceutical Industry
Glass and Ceramics Industry
Electronics Industry
Aeronautical Industry
Transport & Logistics

Apart from the configurations detailed below, we design and manufacture upon request from 100 metres of minimum quantity

Nº. of conductors x mm <sup>2</sup>	Outer diameter in mm
(25 x 0,25)	11,6
(5 x 0,34)	6,2
(9 x 0,50)	9,3
(12 x 0,50)	10,8
(18 x 0,50)	13,0
(5 x 0,75)	8,1
(12 x 0,25)	8,1
(2 x 0,50)	6,9
5 G 0,50	7,0
7 x 0,50	8,0
9 x 0,50	8,8
12 x 0,50	10,3
18 x 0,50	12,3
3 G 1	7,2
4 G 1	7,9
5 G 1	8,5
7 G 1	10,0
12 G 1	12,9
18 G 1	15,5
19 G 1	16,3
30 G 1	20,0

Nº. of conductors x mm <sup>2</sup>	Outer diameter in mm
13x0,50+3G1+(2x0,50)	12,2
(2x1)+(3x1)+1G1	10
(4x2x0,18mm <sup>2</sup> )	7
(4x2x0,25mm <sup>2</sup> + 2x1mm <sup>2</sup> )	8,6
(4x2x0,38mm <sup>2</sup> + 4x0,50mm <sup>2</sup> )	8,9
1x10mm <sup>2</sup>	6,1
1x25mm <sup>2</sup>	10,7
1x35mm <sup>2</sup>	12,8
2x(2x0,75)mm <sup>2</sup>	9
2x(2x0,75)mm <sup>2</sup> + (3x0,75mm <sup>2</sup> )	10,3
2x(2x1)+1G1+(2x0,34)+2x(2x0,34)+2x(2x0,25)	14,5
5 G 1,5mm <sup>2</sup>	9,9
5x(2x0,25mm <sup>2</sup> )+2x(2x1mm <sup>2</sup> )+1G1mm <sup>2</sup>	12,9
6x0,75mm <sup>2</sup> + (3x0,75mm <sup>2</sup> )	10,3
7x1mm <sup>2</sup> + (2x0,50mm <sup>2</sup> )	9,2
17 G 1mm <sup>2</sup> + (2x1mm <sup>2</sup> )	14,3
20x0,50+(3x1)+(3x0,50)+1G0,75	14,6
23 G 1mm <sup>2</sup> + (2x1mm <sup>2</sup> )	13,2

Sumcab reserves the right to modify these specifications with no prior notice.

## Sumflex® Mechatronic HFS

**Application:** High frequency welding cable (up to 10 kHz) for articulated robot of 6 axes, specially designed for the movements of torsion, bending and traction. UL & CSA certified. Halogen free and flame retardant cables.



### General design

Filling	Central filling
Conductor	Extra-fine threads of bare copper with PTFE tape over each group of threads
Insulation	TPE-E
Protection	PTFE tape
Exterior sheath	PUR, black colour (other colours upon request)

### General technical details

Service voltage	1000V
Test voltage	4000V
Minimum bend radius	7.5 x outer diameter
Service temperature	-5°C to +80°C
Bending	+/-380°
Number of cycles:	Min. 1 mio. / Max. 10 mio. Depending on the exact application. For more information, contact your Sumcab technical sales manager.

### General features

UL & CSA	Certification for USA and Canada
UL FT2	Flame retardant
HD 22.10	Resistance to oils and industrial greases
EN 60754-1	Halogen free
Other features	Good resistance to acids, alkaline solutions, solvents, hydraulic liquids, etc.
	Resistant to abrasion and cuts
	Resistant to welding splatter
	Outer sheath with low-adherence surface
	Excellent resistance to moisture
	Totally silicone-free

### Application markets

Automation

N°. of conductors x mm <sup>2</sup>	Outer diameter in mm
1 x 16	12

Sumcab reserves the right to modify these specifications with no prior notice.



# Sumflex Mechatronic HFS for high frequency welding

High frequency welding serves to join two pieces (A+B) by supplying high frequency (HF) energy in the form of an electromagnetic field and pressure through compression (P).

The energy is generated by a generator, the power is supplied by an electrode.

The electric energy generates movement of the molecules of the material and thus generates heat.

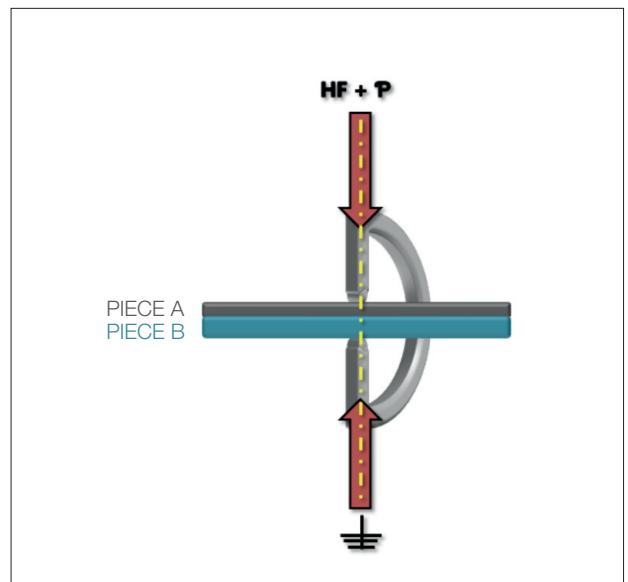
This process, along with the constant compression pressures, melts both pieces.

Unlike conventional welding, the heat is created inside the pieces themselves and does not come from an external source. When the material cools down, a higher quality welding point has been created. This results in a highly resistant and effective welding.

The four principal factors that determine the results of this type of welding are:

- Compression pressure
- Welding strength
- Welding time
- Cooling time

The primary benefit of this method is the fact that it is a constant process. In other words, it can be applied to larger surfaces without having to interrupt and/or remove the welding clamp, which increases productivity significantly. The process is usually clean and very accurate as just the joining area/point will be heated.



Most common materials:

PVC (polyvinyl chloride)
PA (Polyamide)
PUR (polyurethane)
Other dipole materials

Fields of application (examples):

Marine Industry	
Military Industry	
Railway Industry	
Automotive Industry	

(in industrial robots - see image)

## Sumflex® Mechatronic HFS

Due to the Skin-Effect\* that is generated at frequencies of 10 KHz, it is necessary to use a special customized cable. Sumcab Tailor Made Cables has developed the Sumflex Mechatronic HFS for high frequency applications. This cable has been created to transmit energy efficiently. Its design serves to optimise the current density distribution of the conductor.

The cable is formed by various groups of braided conductors of bare, extra-flexible copper. Each group is insulated by a special tape.

Moreover, our cable Sumflex Mechatronic HFS complies with the most demanding requirements regarding mechanical resistance, chemical aggression and thermal range. Designed to withstand millions of bending, torsion and traction cycles, always with very small bending radii (up to 5 x d).

As well as being very resistant to a wide variety of additional environmental effects, such as variable temperatures, oils/greases and chemical products.

### \*Skin-Effect

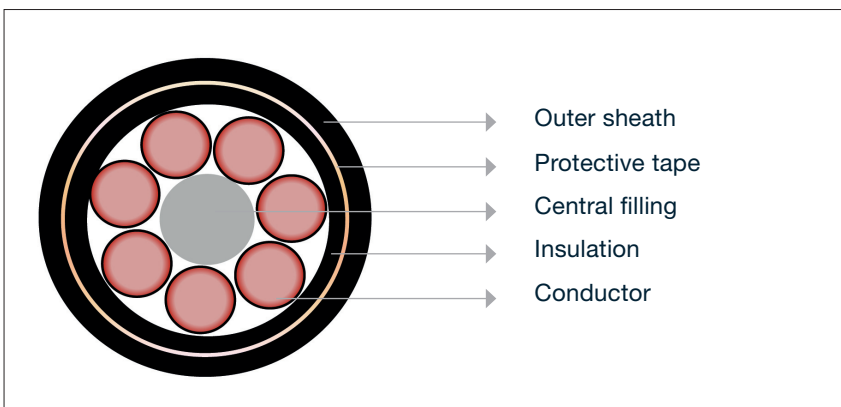
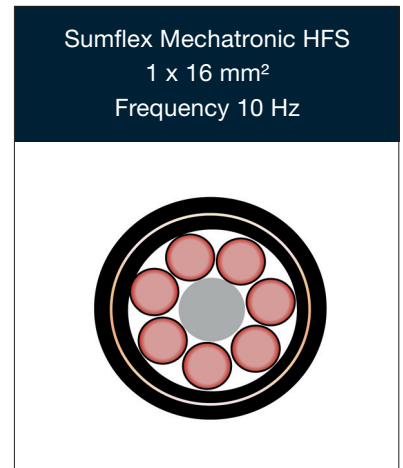
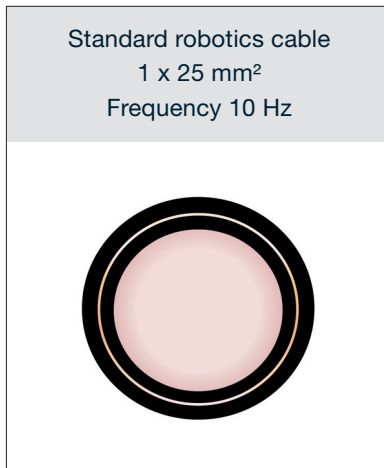
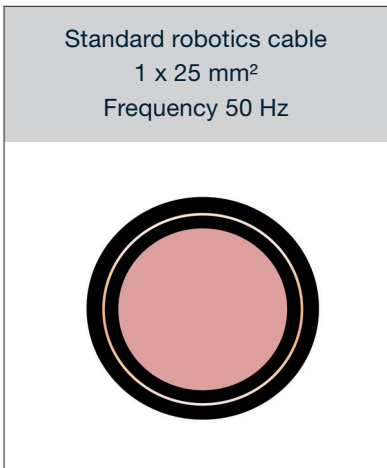
In direct current, the current density is similar along the entire conductor (figure a), but in alternate current it can be observed that the current density is higher on the surface than on the centre (figure b). This phenomenon is known as skin effect, or Kelvin effect.

This phenomenon causes the effective or alternate current resistance to be higher than the ohmic or high current resistance.

This effect causes the variation of the electric resistance in alternate current of a conductor due to the variable frequency of the electric current that travels across it.



Transverse section of the current flow distribution in a cylindrical conductor. For alternate current, most of the electrical current (63%) flows between the outer surface and skin depth,  $\delta$ , depending on the frequency of the current and the electric and magnetic properties of the conductor.



ADVANTAGES
Efficient distribution of current flow
Reduced section = cost reduction
Smaller minimum bend radius
Reduced weight
More flexible

TAILOR MADE CABLES



## Technical Information

## Conversion table AWG - mm<sup>2</sup>

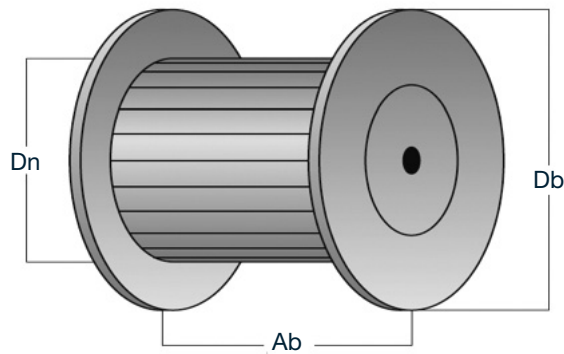
North American measurement unit		Exact measurement mm <sup>2</sup>	Nominal measurement compliant mm <sup>2</sup>
AWG	kcmil		
	750	380,03	400
	500	253,35	300
	450	228,02	240
	400	202,68	
	350	177,35	185
	300	152,01	
	200	126,68	150
4/0		107,22	120
3/0		85,01	95
2/0		67,43	70
1/0		53,49	
1		42,41	50
2		33,62	35
3		26,67	
4		21,15	25
5		16,77	
6		13,30	16
7		10,55	
8		8,37	10
9		6,63	
10		5,26	6
11		4,17	
12		3,31	4
13		2,62	
14		2,08	2,5
15		1,65	
16		1,31	1,5
17		1,04	
18		0,82	1
19		0,65	0,75
20		0,52	
21		0,41	0,5
22		0,33	0,24
23		0,26	
24		0,20	0,25
25		0,16	
26		0,13	0,14

## Composition of the conductors

Section in mm <sup>2</sup>	Rigid (Class 2)		Flexible (Class 5)	Extra flexible (Class 6)			
0,14				~18 x 0,10	~18 x 0,1	~36 x 0,07	~72 x 0,05
0,25			~14 x 0,15	~32 x 0,10	~32 x 0,1	~65 x 0,07	~128 x 0,05
0,34		7 x 0,25	~19 x 0,15	~42 x 0,10	~42 x 0,1	~88 x 0,07	~174 x 0,05
0,38		7 x 0,27	~12 x 0,20	~21 x 0,15	~48 x 0,1	~100 x 0,07	~194 x 0,05
0,5	7 x 0,30	7 x 0,30	~16 x 0,20	~28 x 0,15	~64 x 0,1	~131 x 0,07	~256 x 0,05
0,75	7 x 0,37	7 x 0,37	~24 x 0,20	~42 x 0,15	~96 x 0,1	~195 x 0,07	~384 x 0,05
1,0	7 x 0,43	7 x 0,43	~32 x 0,20	~56 x 0,15	~128 x 0,1	~260 x 0,07	~512 x 0,05
1,5	7 x 0,52	7 x 0,52	~30 x 0,25	~84 x 0,15	~192 x 0,1	~392 x 0,07	~768 x 0,05
2,5	7 x 0,67	~19 x 0,41	~50 x 0,25	~140 x 0,15	~320 x 0,1	~651 x 0,07	~1280 x 0,05
4	7 x 0,85	~19 x 0,52	~56 x 0,30	~224 x 0,15	~512 x 0,1	~1040 x 0,07	
6	7 x 1,05	~19 x 0,64	~84 x 0,30	~192 x 0,20	~768 x 0,1	~1560 x 0,07	
10	7 x 1,35	~49 x 0,51	~80 x 0,40	~320 x 0,20	~1280 x 0,1	~2600 x 0,07	
16	7 x 1,70	~49 x 0,65	~128 x 0,40	~512 x 0,20	~2048 x 0,1		
25	7 x 2,13	~84 x 0,62	~200 x 0,40	~800 x 0,20	~3200 x 0,1		
35	7 x 2,52	~133 x 0,58	~280 x 0,40	~1120 x 0,20			
50	~19 x 1,83	~133 x 0,69	~400 x 0,40	~705 x 0,30			
70	~19 x 2,17	~189 x 0,69	~356 x 0,50	~990 x 0,30			
95	~19 x 2,52	~259 x 0,69	~485 x 0,50	~1340 x 0,30			
120	~37 x 2,03	~336 x 0,67	~614 x 0,50	~1690 x 0,30			
150	~37 x 2,27	~392 x 0,69	~765 x 0,50	~2123 x 0,30			
185	~37 x 2,52	~494 x 0,69	~944 x 0,50	~1470 x 0,40			
240	~37 x 2,87	~627 x 0,70	~1225 x 0,50	~1905 x 0,40			
300	~61 x 2,50	~790 x 0,70	~1530 x 0,50	~2385 x 0,40			
400	~61 x 2,89		~2035 x 0,50				
500	~61 x 3,23		~1768 x 0,60				
630	~91 x 2,97		~2286 x 0,60				

## Dimensions of the wooden reels

Reel type	Weight (kg)	Db (mm)	Dn (mm)	Ab (mm)
M600	19	630	315	370
M800	38	800	400	520
M1000	57	1.000	500	610
M1200	76	1.200	630	610
M1400	114	1.400	710	810
M1600	191	1.600	900	980
M1800	250	1.800	1.120	960
M2000	381	2.000	1.250	960
M2400	520	2.400	1.400	1.190





## Reel capacity

Ø Cable (mm)	M600 (m)	M800 (m)	M1000 (m)	M1200 (m)	M1300 (m)	M1600 (m)	M1800 (m)	M2000 (m)	M2200 (m)	M2400 (m)
5	2.112	5.391	10.732	15.582	30.178	44.334	49.329	61.751	97.934	131.221
6	1.467	3.744	7.453	10.821	20.957	30.788	34.256	42.883	68.010	91.126
7	1.077	2.751	5.475	7.950	15.397	22.620	25.168	31.506	49.966	66.950
8	825	2.106	4.192	6.087	11.788	17.318	19.269	24.122	38.255	51.258
9	652	1.664	3.312	4.809	9.314	13.683	15.225	19.059	30.226	40.500
10	528	1.348	2.683	3.896	7.544	11.084	12.332	15.438	24.483	32.805
11	436	1.114	2.217	3.219	6.235	9.160	10.192	12759	20.234	27.112
12	367	936	1.863	2.705	5.239	7.697	8.564	10.721	17.002	22.782
13	312	797	1.588	2.305	4.464	6.558	7.297	9.135	14.487	19.411
14	269	688	1.369	1.988	3.849	5.655	6.292	7.876	12.492	16.737
15	235	599	1.192	1.731	3.353	4.926	5.481	6.861	10.882	14.580
16	206	526	1.048	1.522	2.947	4.330	4.817	6.030	9.564	12.815
17	183	466	928	1.348	2.611	3.835	4.267	5.342	8.472	11.351
18	163	416	828	1.202	2.329	3.421	3.806	4.765	7.557	10.125
19	146	373	743	1.079	2.090	3.070	3.416	4.276	6.782	9.087
20	132	337	671	974	1.886	2.771	3.083	3.859	6.121	8.201
21	120	306	608	883	1.711	2.513	2.796	3.501	5.552	7.439
22	109	278	554	805	1.559	2.290	2.548	2.190	5.059	6.778
23	100	255	507	736	1.426	2.095	2.331	2.918	4.628	6.201
24	-	234	466	676	1.310	1.924	2.141	2.680	4.251	5.695
25	-	216	429	623	1.207	1.773	1.973	2.470	3.917	5.249
26	-	199	397	576	1.116	1.640	1.824	2.284	3.622	4.853
27	-	185	368	534	1.035	1.520	1.692	2.118	3.358	4.500
28	-	172	342	497	962	1.414	1.573	1.969	3.123	4.184
29	-	160	319	463	897	1.318	1.466	1.836	2.911	3.901
30	-	150	298	433	838	1.232	1.370	1.715	2.720	3.645
31	-	140	279	405	785	1.153	1.283	1.606	2.548	3.414
32	-	132	262	380	737	1.082	1.204	1.508	2.391	3.204
33	-	124	246	358	693	1.018	1.132	1.418	2.248	3.012
34	-	117	232	337	653	959	1.067	1.335	2.118	2.838
35	-	110	219	318	616	905	1.007	1.260	1.999	2.678
36	-	104	207	301	582	855	952	1.191	1.889	2.531
37	-	-	196	285	551	810	901	1.128	1.788	2.396
38	-	-	186	270	522	768	854	1.069	1.696	2.272
39	-	-	176	256	496	729	811	1.015	1.610	2.157
40	-	-	168	243	472	693	771	965	1.530	2.050
41	-	-	160	232	449	659	734	918	1.456	1.952
42	-	-	152	221	428	628	699	875	1.388	1.860
43	-	-	145	211	408	599	667	835	1.324	1.774
44	-	-	139	201	390	572	637	797	1.265	1.694
45	-	-	132	192	373	547	609	762	1.209	1.620
46	-	-	127	184	357	524	583	730	1.157	1.550
47	-	-	121	176	342	502	558	699	1.108	1.485
48	-	-	116	169	327	481	535	670	1.063	1.424



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