rspro.com









WIRING & CONNECTIVITY

SELECTION GUIDE

RS PRO APPROVED

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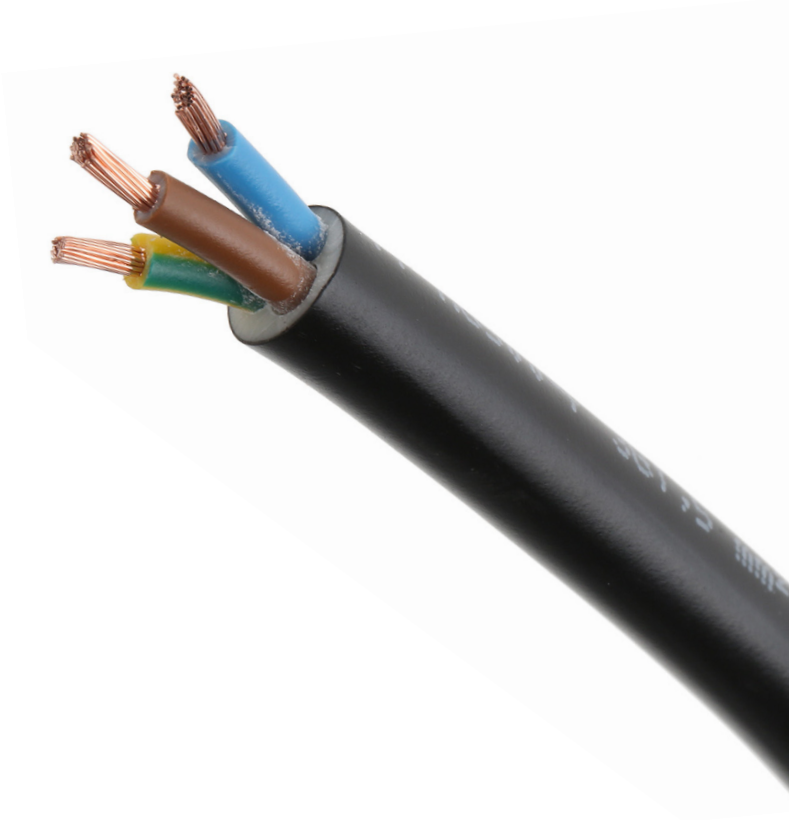
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INTRODUCTION

RS PRO offer you an extensive selection of cables, connectors and accessories for every wiring and connectivity application and environment. High quality, professionally approved products, and a wide choice make the RS PRO range the perfect solution for your every need.

Cores

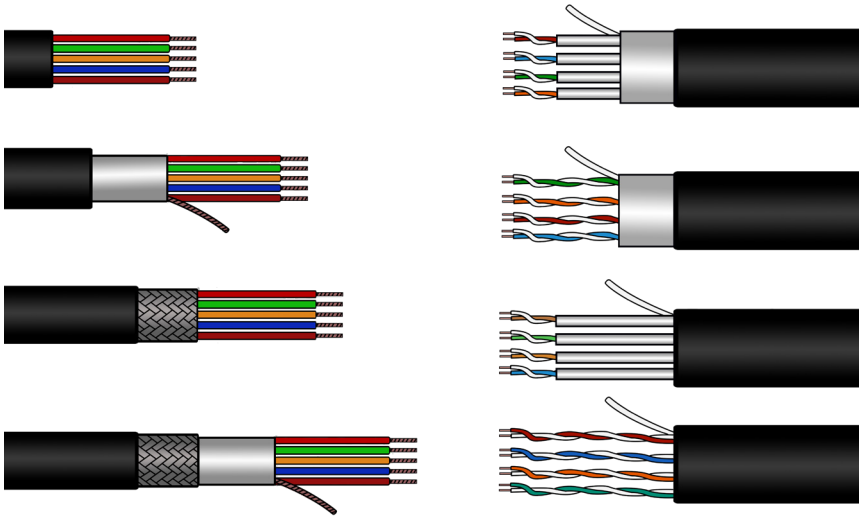
Single, designed for the internal cabling of electrical and electronic equipment. Used also for wiring within machines and control panels.

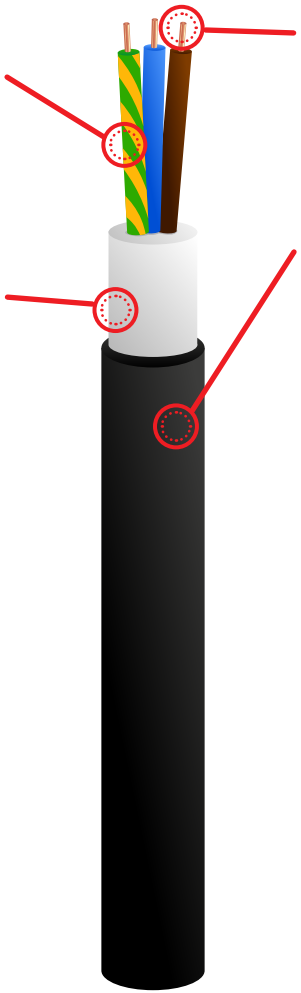
Multi, designed for a variety of power and control applications including household appliances, tools and fixed installations.

Screens

Screening protects a conductor from external interference or EMI and prevents radiation from the cable itself.

- Foiled, Braided, Foil-Braided, Shielded and Shielded-Foil





Conductors

Solid, suited to permanent and semi-permanent wiring due to resistance to flexing when compared with stranded wire.

Stranded, best suited where frequent flexing or vibration is more likely to occur.

Sheaths

Several options to meet all applications requirements.

PVC

- Excellent insulating properties
- Stable, robust, very durable
- Cost effective choice

Rubber

- Ideal for outdoor and wet environments
- Withstands rough treatment
- Abrasion proof

PTFE

- Used in high temperature applications
- Unaffected by most oils or fuels
- Certain types suitable for temperatures to 400ºC

PE (HDPE/LDPE)

- Used extensively in communication cabling
- Excellent UV resistance

LSZH Low Smoke Zero Halogen

- Preferred type for populated or enclosed areas
- Used in trains, aircraft and shipping applications
- Suitable in areas of poor ventilation

EPR

- Offers good weathering stability
- Heat resistant to 160ºC
- Durable and long lasting

PET

- Moisture resistant and tough
- Good chemical resistance
- Excellent mechanical, electrical and thermal properties

FEP

- Good weather resistance
- Low flammability
- Good temperature stability

RS PRO cables offering is manufactured according to relevant national, international, and industry standards that a cable must meet, and complies with a number of legislative and regulatory requirements.

APPROVALS AND STANDARDS

BASEC: The British Approvals Service for Cables in an independent testing and approvals body for cable and wire. BASEC certification ensures a product meets its claimed national and international standards.

UL: A UL Listed cable or wire indicates that product samples have passed safety requirements set by the safety and certification company, Underwriters Laboratories. UL is an internationally recognised standard.

DEF STAN: A cable marked as meeting a Defence Standard (DEF STAN) will be of a high grade and high specification for us by the MoD, specifically for aircraft and military applications.

Mil Spec: A cable or wire which complies with Mil Spec (Military Specification) means it is approved for United States military use. Mil Spec can also apply to products other than cables, such as connectors.

RoHS: The Restriction of Hazardous Substances Directive specifies maximum limits of certain hazardous substances in electrical and electronic products. Cable and wire is included in this.

REACH: REACH is an acronym of Registration, Evaluation, Authorisation and Restriction of Chemicals. As a European regulation designed to protect human health from the risks posed by chemicals, REACH is applicable to cables and wires by the production and use of chemicals in the sheath and other parts.

EUROCLASS - AN EXPLANATION

CPR – The construction Products Regulation

What is CPR?

The Construction Products Regulation (CPR) European legislation affecting products used in fixed installations in buildings and construction.

- Is an assessment on how cables react in the event of fire. Provides a common language across Europe to aid purchasing decisions.
- Assessed against European Standard EN 50575:2018.
- In effect for electrical cables since 1st July 2017.
- Will continue to apply to the UK after 1st January 2021.
- Importantly, CPR doesn't override any other national or international standards or attempt to harmonise building codes. Each European country sets its own requirements over and above compliance.

Since 1st July 2017 the CPR covers all construction cables to be used in fixed installations, sold in the EU.

Effected products are tested, given a Euroclass rating in accordance with its 'Reaction to fire', a declaration of performance is issued (DOP) and a new CE mark is given on the packaging.

Note: Fire resistant cables are excluded from CPR until the product standard for 'Resistance to Fire' is issued.

UKCA

Conformity Assessed (UKCA) marking is a certification mark that indicates conformity with the applicable requirements for products sold within Great Britain.

UKCA marking will only apply to products placed on the market in Great Britain. In Northern Ireland, CE marking will continue to be recognised.

HARMONISED REFERENCES

The Harmonised reference system, commonly known as HAR, indicates products which conform to a European Harmonisation Standard as set out by CENELEC, the leading European standardisation organisation. CENELEC is technologically neutral and aims to improve standards and quality across Europe, allowing the trade of common standard product.

HAR cables have a designation code system conforming to the norms set out in harmonisation documents HD 361 and DIN VDE 0292.

TRIRATED

The triple rating of

- BS6231 (UK)
- CSA TEW (Canada)
- UL style 1015, 1028 or 1283 (America)

makes it compatible across many markets, for applications including high voltage wiring within electrical cabinets, switchgear wiring, rectifier equipment and motor starter circuitry.

AWG vs mm²

AWG NUMBER	CABLE CROSS SECTION IN MM²	OUTER DIAMETER Ø MM	CONDUCTOR RESISTANCE IN OHM/KM	MAX CURRENT AMP
1000 MCM	507	29.3	0.036	-
900	456	27.8	0.04	-
750	380	25.4	0.048	-
600	304	22.7	0.061	-
550	279	21.7	0.066	-
500	253	20.7	0.07	-
450	228	19.6	0.08	-
400	203	18.5	0.09	-
350	177	17.3	0.1	-
300	152	16	0.12	-
250	127	14.6	0.14	-
4/0	107.2	11.68	0.18	302
3/0	85	10.4	0.23	239
2/0	67.4	9.27	0.29	190
0	53.4	8.25	0.37	150
1	42.4	7.35	0.47	119
2	33.6	6.54	0.57	94
3	26.7	5.83	0.71	75
4	21.2	5.19	0.91	60
5	16.8	4.62	1.12	47
6	13.3	4.11	1.44	37
7	10.6	3.67	1.78	30
8	8.34	3.26	2.36	24
9	6.62	2.91	2.77	19
10	5.26	2.59	3.64	15
11	4.15	2.3	4.44	12
12	3.31	2.05	5.41	9.3

AWG vs mm² Continued

AWG NUMBER	CABLE CROSS SECTION IN MM²	OUTER DIAMETER Ø MM	CONDUCTOR RESISTANCE IN OHM/KM	MAX CURRENT AMP
13	2.63	1.83	7.02	7.4
14	2.08	1.63	8.79	5.9
15	1.65	1.45	11.2	4.7
16	1.31	1.29	14.7	3.7
17	1.04	1.15	17.8	2.9
18	0.823	1.024	23	2.3
19	0.653	0.912	28.3	1.8
20	0.519	0.812	34.5	1.5
21	0.412	0.723	44	1.2
22	0.324	0.644	54.8	0.92
23	0.259	0.573	70.1	0.73
24	0.205	0.511	89.2	0.58
25	0.163	0.455	111	0.46
26	0.128	0.405	146	0.36
27	0.102	0.361	176	0.29
28	0.0804	0.321	232	0.23
29	0.0646	0.286	282	0.18
30	0.0503	0.255	350	0.14
31	0.04	0.227	446	0.11
32	0.032	0.202	578	0.09
33	0.0252	0.18	710	0.07
34	0.02	0.16	899	0.06
35	0.0161	0.143	1125	0.04
36	0.0123	0.127	1426	0.04
37	0.01	0.113	1800	0.03
38	0.00795	0.101	2255	0.02
39	0.00632	0.0897	2860	0.02
40	-	-	-	0.01

EU & UK

IEC Color Code for most of the European Union (UK from 2004).

Function	IEC Code for most of European Union	UK (New Code as per IEC)	UK (Old Code)
Three Phase Line (L1)			
Three Phase Line (L2)			
Three Phase Line (L3)			
Neutral (N)			
Protective Earth or Ground (PE)			
Single Phase Line			

US NEC

United States National Electrical Code.

Function	Colour Code (for 120/ 208/240V)	Colour Code (for 277/480V)
Three Phase Line (L1)		
Three Phase Line (L2)		
Three Phase Line (L3)		
Neutral (N)		
Protective Earth or Ground (PE)		
Single Phase Line		

Designation code cables according to VDE 0281/0282

H	05	V	V		C4	F	4	G	0.75
1	2	3	4	-	5	6	7	8	9

1. Relationship to Standards

- **H** Harmonised Type (HAR)
- **A** Authorised National Standards

2. Nominal Voltage

- **01** 100V
- **03** 300/300V
- **05** 300/500V
- **07** 450/750V

3. Insulating Materials

- **V** PVC
- **V2** PVC (90°C)
- **V3** PVC cold-resistant
- **B** EPR-rubber (90°C)
- **G** EVA
- **E** PE
- **R** Natural or synthetic rubber
- **S** Silicon rubber
- **X** XLPE
- **Z** LSOH -compound

4. Sheathing Materials

- **V** PVC
- **V2** PVC (90°C)
- **V3** PVC cold-resistant
- **V4** PVC cross-linked
- **V5** PVC oil-resistant
- **R** natural or synthetic rubber
- **N** chloroprene rubber
- **N2** chloroprene rubber for welding cables
- **N4** chloroprene rubber heat- resistant
- **N8** chloroprene rubber (water-resistant)
- **J** glass fibre braid
- **T** textil braid
- **T6** textil over each core
- **Q** polyurethan (PUR)
- **Q4** polyamide
- **Z** LSOH -compound

5. Special Constructions

- **C** concentric copper conductor
- **C4** copper braided screen
- **H** flat , divisible cords
- **H2** flat , non divisible cords
- **H6** flat , non divisible cords for elevators
- **H7** two-layer insulating jacket
- **H8** helical cord

6. Conductor Form

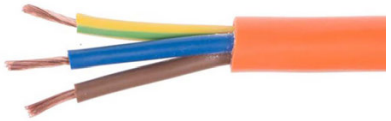
- **U** round, solid
- **R** round, stranded
- **K** fine stranded,
- **F** fine stranded (flexibel cords)
- **H** fine stranded (highly fexible)
- **Y** tensil conductor
- **D** fine stranded for welding cables
- **E** fine stranded for welding cables (highly fexible)

7. Number of Cores

8. Protective Conductor

- **X** without green/yellow core
- **G** with green/yellow core

9. Cross-sectional Size



Power Cables

Designation code cables according to VDE 0250

N	Y	MH	C	Y	-J		4		0.75
1	2	3	4	5	6		7	x	8

1. Relationship to Standards

N according to VDE
(N)/X with reference to VDE

2. Insulating Materials

Y	PVC	**G**	elastomer
4Y	polyamide	**2G**	silicon
5Y	PTFE (teflon)	**3G**	EPR-rubber
6Y	FEP (teflon)	**4G**	EVA
9Y	polypropylen	**5G**	polychloroprene
11Y	polyurethan (PUR)	**HX**	LSOH
2X	XLPE		

3. Cable Description

A	single-core	**SL**	control/welding cable
D	solid wire	**S**	control cable
AF	single-core, fine stranded	**LS**	light control cable
F	flexible wire for fittings	**FL**	flat cable
L	fluorescent tube cable	**Si**	silicon cable
LH	connecting cable for light mechanical load	**Z**	twin cable
MH	connecting cable for middle mechanical load	**GL**	glass fibre
SH	connecting cable for heavy mechanical load	**Li**	stranded wires acc to. VDE 812
SSH	connecting cable for special mechanical load	**LiF**	fine stranded wires acc. to VDE 812

4. Special Constructions

T strength member
ö oil-resistant
u flame resistant
w heat-/weather resistant
FE fire resistant
C screen
S steel wire armouring

5. Sheathing Materials

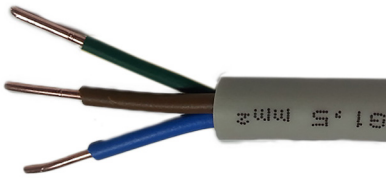
see insulation materials
P Polyurethan

6. Protective Conductor

-J with green/yellow core
-O without green/yellow core

7. Number of Cores

8. Cross-sectional Size



Power Cables

Designation code cables according to VDE 0815-0816

J	E	-	Y	(St)	Y		4	x	2	x	0.8		Bd
1	2	-	3	4	5		6	x	7	x	8	9	10

1. Relationship to Standards

A	outdoor cable
G	mining cable
J	installation cable
L	equipment wire
S	switch cable
Li	equipment wire with fine stranded conductor

2. Additional specifications

B	lightning protection
J	Indukction protection
E	Industry-electronics

3. Insulating Materials

Y	PVC	**5Y**	PTFE (teflon)
2Y	PE	**6Y**	FEP (teflon)
02Y	cell-PE	**7Y**	ETFE (teflon)
02YS	foam-Skin	**P**	paper

4. Special Construction

F	petrol jelly filler	**W**	corrugated steel sheath
L	aluminium sheath	**M**	lead sheath
LD	corrugated Al.-sheath	**Mz**	special lead sheath
(L)	laminated aluminium sheath	**b**	amouring
(St)	screen of plastic coated Al-foil	**c**	jute jacket+ bituminous compund
(K)	copper tape screen	**E**	compund with embedded tape
(Z)	steel wire amouring		

5. Sheathing Materials

see 3 Insulation materials

6. Number of Elements

7. Stranding Elements

1	single core
2	pair
4	quat

8. Cross-sectional Size

9. Type of Stranding

F	star quad (railway)
St	star quad with phantom circiut (long distance)
St I	star quad (long distance)
St III	star quad (subscriber line)
TF	star quad for carrier frequenycy
PiMF	pair in metal foil
DIMF	triple in metal foil
ViMF	quad in metal foil

10. Stranding Layout

Lg	stranding in layer
Bd	stranding in unit

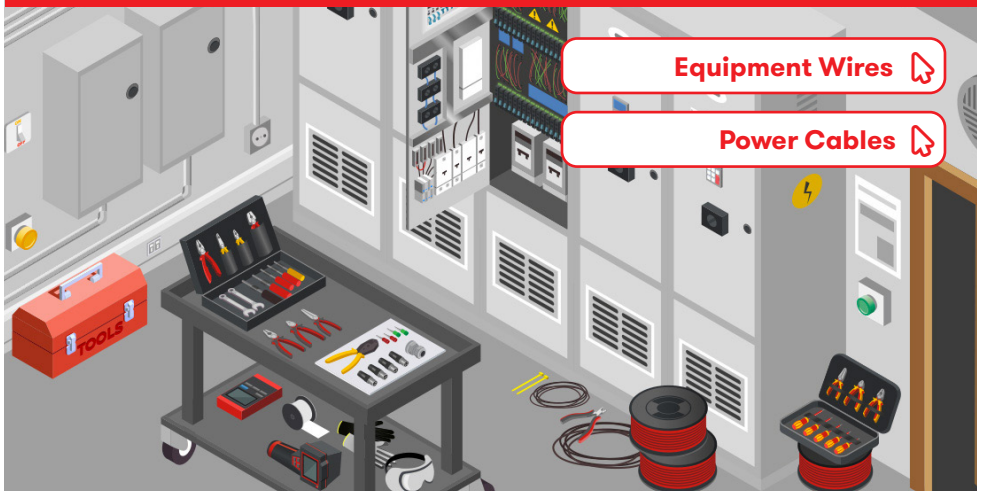


Communication Cables

WAREHOUSE



ELECTRICAL INSTALLATION



PRODUCTION LINE



OFFICE



What are they?

Hookup and equipment wires are insulated and flexible wiring with the sheathed cover of the wires generally made from PVC which ensure protection and insulation.

What are they used for?

Hook up wires are primarily used for low voltage applications as for example in control panel wiring, plugs, socket, computers, meters, auto-motives, and other electronics.

RANGE	SHEATH	AWG	OUTER DIAMETER	VOLTAGE RATING	COLOUR	REEL LENGTH
British Standard 	PVC	17 →24	1.2 → 2.65mm	300 → 1000V	Black, Blue, Brown, Green, Grey, Orange, Pink, Red, Violet, White, Yellow, Green/Yellow, Yellow/Green	100m →500m
Tinned Copper Wire 	PVC	18 → 24	1.58 → 2.79mm	300 → 600V	Black, Blue, Green, Red, White	100m
DEF STAN 	ETFE	12 → 24	1.15 → 2.99mm	600V	Black, White	100m
Harmonised 	PVC	13 → 20	2.4 → 4.1mm	300 → 750V	Black, Blue, Brown, Grey, Red, White, Yellow, Green/Yellow	100m
UL Standard 	PVC, PTFE, MPPE	12 → 28	0.9 → 4.2mm	150 → 600V	Black, Blue, Brown, Green, Grey, Orange, Purple, Red, White, Yellow	100m
Tri-Rated 	PVC	4 → 22	2.6 → 10.6mm	600 → 1000V	Black, Blue, Brown, Dark Blue, Green, Green/ Yellow, Grey, Light Blue, Mid-blue, Orange, Pink, Purple, Red, White, Yellow	100m

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CABLE MARKING 

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TERMINAL BLOCKS 

WIRE TERMINAL & SPLICES 

What are they?

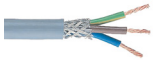
Control cables features a multicore flex and tinned copper wire, with screened and shield version. Available in a wide range of core configurations and cross-sectional area sizes, with Harmonised colour code.

What are they used for?

CY: screened flexible control cables typically used in applications reliant on interference free transmission

SY: armoured flexible control cable designed for measuring control under tough mechanical stresses.

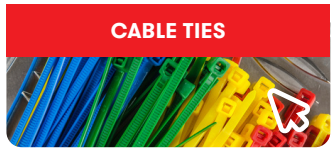
YY: highly flexible unshielded multicore power and control cables.

RANGE	SHEATH	NO OF CORES	AWG	OUTER DIAMETER	VOLTAGE RATING	SCREEN/SHIELD	COLOUR	REEL LENGTH
CY 	PVC	2 → 18	13 → 26	4.1 → 15.6mm	300 → 500V	Braid, Tinned Copper Braid	Grey	50 → 100m
SY 	PVC	2 → 25	9 → 18	7.3 → 19.7mm	300 → 500V	Braid, Galvanised Steel	Grey	50m
YY 	PVC	2 → 15	9 → 24	3.7 → 20.8mm	300 → 500V	Galvanised Steel	Grey	25 → 100m

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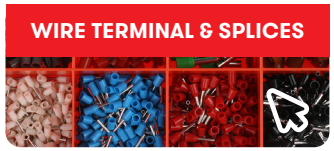






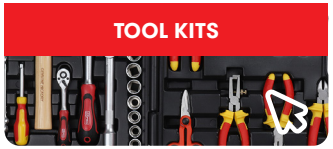


















What are they?

Electrical and mains power cables are available with solid or stranded conductors with a varying number of cores, voltage and current ratings as well as various sheathing materials.

What are they used for?

Electrical and mains power cables are present in almost all applications. Used to connect mains sockets, lighting, switches and more, electrical cords are essential to build an electrical infrastructure in any building.

RANGE	SHEATH	NO OF CORES	AWG	OUTER DIAMETER	VOLTAGE RATING	COLOUR	STANDARDS AVAILABLE	REEL LENGTH
Mains Power 	PVC, Rubber Silicone, TPE	1 → 7	9 → 20	3.2 → 19.1mm	300 → 1000V	Black, Blue, Brown, Green/Yellow, Grey, Orange, Red, Red/ Brown, White, Yellow	EN 50525-2-11, EN 50525-2-21, H03VV-F, H03VVH2-F, H05RR-F, H05VV-F, H05Z1Z1-F, H07BN4-F, H07RN-F, H07V-K, H07ZZ-F	25 → 100m
Armoured Cables (SWA) 	PVC+SWA (Steel Wire Armoured)	2 → 5	5 → 15	12.6 → 26.3mm	600 → 1000V	Black	BASEC	50m
Conduit & Trunking Cables 	LSZH, PVC	1	2 → 15	2.7 → 11.3mm	450 → 750V	Black, Blue, Brown, Green/Yellow, Grey, Orange, Purple, Red, White	H07V-R, H07V-U, H07Z-R, H07V-R, H07V-U, H07Z-R	50 → 100m
Multicore Industrial Cables 	PE, PVC, XLPE	2 → 36	9 → 30	2.4 → 22.8mm	250 → 1000V	Black, Green Grey White	BASEC, Defence Standard 61-12 Part 4, Defence Standard 61-12 Part 5, Euroclass Eca	25 → 500m

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Related Products

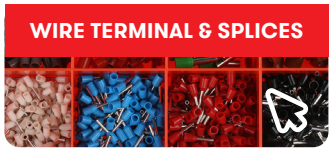






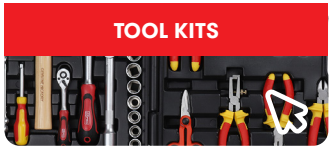


















What are they?

Network cables are used to connect and transfer data and information between computers, routers, switches and storage area networks. From Cat5 to Cat8, from fibre optic to coaxial, these cables are essentially the carrier or media through which data flows.

What are they used for?

Network cables are used to connect various network hardware via Ethernet connection. Ethernet cables can be used either as patches for simply connecting a computer sharing a printer, or fixed industrial installation.

RANGE	SHEATH	NO OF CORES	AWG	OUTER DIAMETER	VOLTAGE RATING	COLOUR	STANDARDS AVAILABLE	REEL LENGTH
Twisted & Multipair Industrial Cable 	PVC, LSZH (Shield: Foil, Tinned Copper Braid)	1 → 19 (pairs)	18 → 24	2.4 → 11.5mm	300 → 600V	Blue, Grey, White	CE, CSA Certified, CSA FT4, EN 2235, EN 2714-013, EU Low Voltage Directive 2006/95/EC, Euroclass Eca, FAR 25-869, RS 232, UL, UL 2919	50 → 500m

RANGE	SHEATH	CATEGORY	MAX BANDWIDTH	MAX TRASNMISSION SPEED AT 100M	SHIELD TYPE	COLOUR	CONNECTOR TYPE	REEL LENGTH
LAN Cables 	PVC, LSZH, PE	Cat5, Cat5e, Cat6, Cat6a, Cat7, Cat7a, Cat8	250 → 2000MHz	10/100Mbps/100MHz (Cat5) 1Gbps/100MHz (Cat5a) 1Gbps/250MHz (Cat6) 10Gbps/500MHz (Cat6a) 10Gbps/600MHz (Cat7) 40Gbps/2000MHz (Cat8)	F/UTP, FTP, S/FTP, U/UTP, UTP	Black, Blue, Green, Grey, Orange, Purple, Red, White, Yellow	Unterminated, RJ45	1 → 500m

RANGE	CONDUCTOR TYPE	TERMINATION	COAX TYPE	OUTER DIAMETER	VOLTAGE RATING	COLOUR	IMPEDANCE	REEL LENGTH
Coaxial Cables 	Solid, Stranded	Terminated, Unterminated, BNC, SMA, SMB, NCX, N	CT, KX, RF, RG, RGW, Twin RG, URM	1.1 → 10.8mm	170 → 1000V	Black, Brown, Green, Grey, White	50 → 93Ω	1 → 500m

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CABLE TIES 

HEAT-SHRINK & COLD-SHRINK SLEEVES 

CIRCULAR CONNECTORS 

CABLE, CONNECTOR & CRIMPING TOOLS 

WIRE STRIPPERS 

NETWORK TEST & MEASUREMENT 

What are they?

Cable assemblies are cables that are terminated with connectors at either both ends or single end depending upon the application and they are ready to be installed simply plugging them in.

What are they used for?

Cable assemblies are widely used from building maintenance to industrial environment, from office to home. Cable assemblies deliver a fast and easy solution for electrical, power and communication applications.

Industrial Automation Cable Assemblies



Extension Leads & Cables Reels



LAN Cable Assemblies



Power Cable Assemblies



Computer Cable Assemblies



HDMI Cable Assemblies



Jack Cable Assemblies

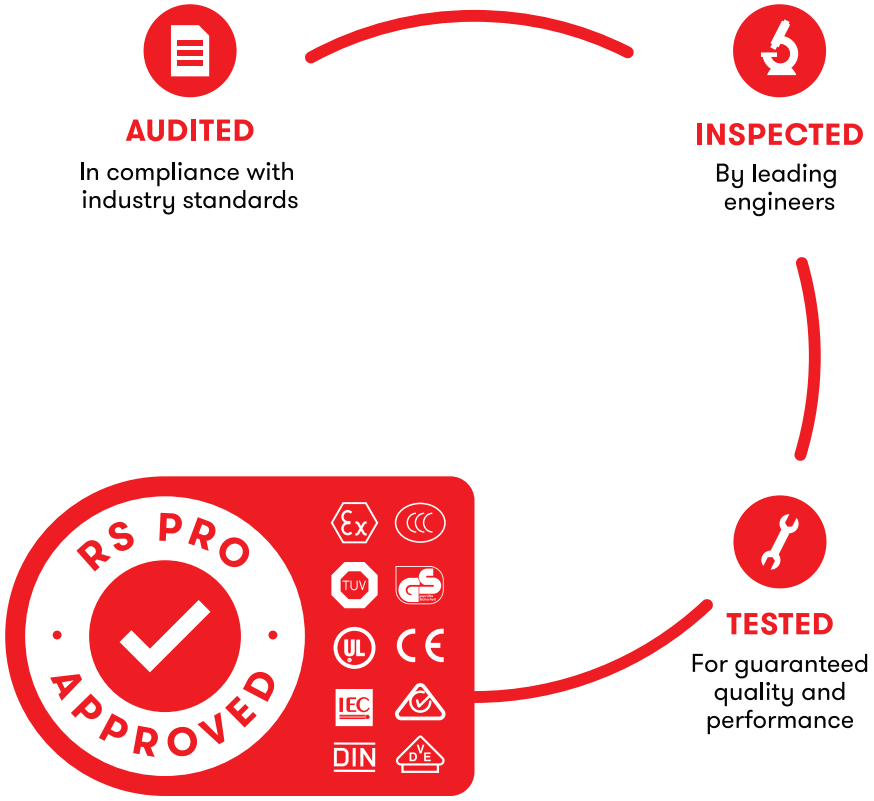


XLR Cable Assemblies



RS PRO products are audited against demanding international standards, inspected for durability and consistency and tested by leading engineers.

Only when products have been through this process are they awarded our seal of approval, quality that can be trusted. Confidence in this process is reflected in our long product warranties, proof that our products will consistently deliver the quality you expect for a long time to come.



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