



ramcro

special cables



**GENERAL
CATALOGUE**

ABOUT COMPANY



Ramcro was founded in 1979, as a family Company producing Special Cables. Family Croci owns 100% of Ramcro S.p.a.. In over 42 years Ramcro successfully expanded its presence in different countries and in a few different but important segments: Oil & Gas, Fire, Railway Signal & Control, BMS, and Optical Cables.

Ramcro production capacity is 4.000 Km/Month and 50.000 Km/Year. Production dpt is 18.000 sqm, of which 3.000 sqm on stock, allowing outstanding very high flexibility in delivery, with also 1.300 sqm of offices and 750 sqm for Laboratory.

Ramcro Laboratory provides any certificates of tests run following major international specifications and it is ready to be certified ISO 17025. It is also recognized by the international body as a "Third part Laboratory". Ramcro solves any kind of technical issue in the area of the cable, assuring the Client's satisfaction thanks to high quality and personalized solutions, improving the Client's efficiency and optimizing its processes. Ramcro offers extremely flexible solutions and a complete range of services, even tailor-made, based on outstanding worldwide experience



Excellence You Can Trust: Ramcro Special Cables

At Ramcro, quality is not just a promise — it's a proven standard. With over 40 years of experience in the design and production of special cables, we are proud to be recognized as one of the few companies in the industry to operate an in-house laboratory accredited to ISO/IEC 17025.

This prestigious accreditation sets us apart. While many rely on third-party laboratories for compliance certificates, Ramcro is directly certified, ensuring the highest level of technical competence, precision, and reliability in every test we perform. Our laboratory doesn't just verify conformity — it defines it.

What does this mean for you?

Unmatched Quality Control: Every cable is tested under the strictest international standards, guaranteeing performance, safety, and durability.

Faster Time to Market: With internal testing capabilities, we reduce lead times and respond quickly to your needs.

Full Traceability & Transparency: From raw materials to final product, every step is monitored and documented with certified accuracy.

Innovation with Confidence: Our R&D team works hand-in-hand with our lab to develop cutting-edge solutions tailored to your most demanding applications.

Choose Ramcro — where certified excellence meets engineering innovation.



ramcro.com

A Laboratory Certified ISO 17025



ISO/IEC 17025:2017



ramcro.com

APPLICATIONS



Infrastructure



Railways



Oil&Gas and Petrolchemicals



Marine & Offshore



Telecommunication



Optical



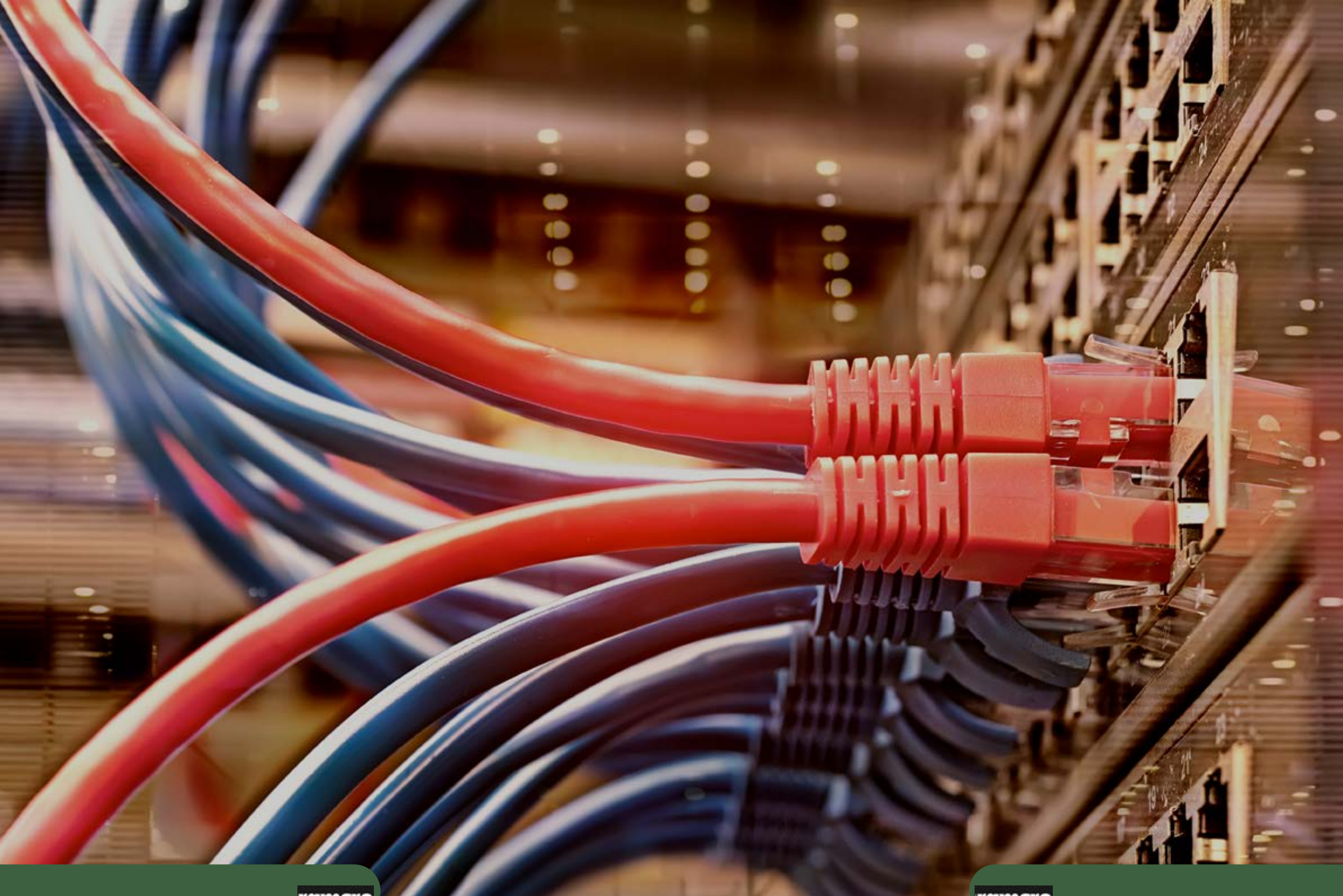
Data,Control and BMS



Defence

SPECIAL CATALOGUE

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ALARM CABLE

CABLES FOR CIVIL AND INDUSTRIAL SAFETY PLANTS
Standard Version



CONSTRUCTION

Formation:

Plain annealed copper wire

Insulation:

Polyvinyl chloride - PVC

Collective Screen:

Aluminium / PETP tape over drain wire

Rip Cord:

Nylon rip-cord

Outer Sheath:

Polyvinyl chloride - PVC

Colour Outer Sheath:

White

IDENTIFICATION OF CORES

0,22 mm²:
0,50/0,75 mm²:

ELECTRICAL DATA

Insulation Resistance @ 20°C: > 25 MOhm*Km
Test Voltage Core-Core: 2000 V
Test Voltage Core-Screen: 2000 V
Mutual Capacitance: < 150 nF/km
Inductance: < 1 mH/km
Operating Voltage: 300 V

PACKAGE: 100, 500, 1000 mt



These cables can be installed along with power cables marked 450/750 V or 0,6/1 kV operating with systems having maximum voltage to ground 400 V AC



STANDARD REFERENCES

fdc543dc-7f8f-4134-
a660-3520d4bb9742:fx

ON REQUEST

- Armour in SWA, SWB or STA
- Personalized colour code and outer sheath

CPR CLASSIFICATION

EN 50575:2016 - C_{CA} s2, d1, a3

TEMPERATURE RANGE

During Operation:
-30° C up to +80°C



During Installation:
-5° C up to +50°C

CHARACTERISTICS

Alarm Cable



Min. Bending Radius
10 x cable diameter



Fixed Laying



ALARM CABLE

CABLES FOR CIVIL AND INDUSTRIAL SAFETY PLANTS
Standard Version

RAMCRO CODE	FORMATION [n° x AWG]	OUTER DIAMETER [mm]	MAX RESISTANCE AT 20°C [Ohm/km]
SAS0222GCSNA	2x0.22	2.9	122.0
SAS0422GCSNA	4x0.22	3.4	122.0
SAS0622GCSNA	6x0.22	3.9	122.0
SAS0822GCSNA	8x0.22	4.1	122.0
SAS1022GCSNA	10x0.22	4.8	122.0
SAS1222GCSNA	12x0.22	4.9	122.0
SAC02500222GCSNB	2x0.50 + 2x0.22	4.0	53.0 122.0
SAC02500422GCSNB	2x0.50 + 4x0.22	4.5	53.0 122.0
SAC02500622GCSNB	2x0.50 + 6x0.22	4.8	53.0 122.0
SAC02500822GCSNB	2x0.50 + 8x0.22	5.4	53.0 122.0
SAC02501022GCSNB	2x0.50 + 10x0.22	5.5	53.0 122.0
SAC02501222GCSNB	2x0.50 + 12x0.22	5.7	53.0 122.0
SAC02750222GCSNB	2x0.75 + 2x0.22	4.4	36.0 122.0
SAC02750422GCSNB	2x0.75 + 4x0.22	4.8	36.0 122.0
SAC02750622GCSNB	2x0.75 + 6x0.22	5.1	36.0 122.0
SAC02750822GCSNB	2x0.75 + 8x0.22	5.7	36.0 122.0
SAC02751022GCSNB	2x0.75 + 10x0.22	5.8	36.0 122.0
SAC02751222GCSNB	2x0.75 + 12x0.22	6.0	36.0 122.0

CABLE PRINTING : RAMCRO SPA ALARM CABLE FIRE RETARDANT <YEAR> IEC 60332-3-24 EN 50575:2014 + A1:2016 CPR CLASS Cca s2, d1, a3 CEI 20-22 III CEI UNEL 36762 C-4(U_o=400V) <BATCH>

ALARM CABLE

CABLES FOR CIVIL AND INDUSTRIAL SAFETY PLANTS
Standard Version for external use



CONSTRUCTION

Formation:
Plain annealed copper wire

Insulation:
Polyvinyl chloride - PVC

Collective Screen:
Aluminium / PETP tape over drain wire

Rip Cord:
Nylon rip-cord

Outer Sheath:
Polyvinyl chloride - PVC

Colour Outer Sheath:
Blue

IDENTIFICATION OF CORES

0,22 mm²:
0,50/0,75 mm²:

ELECTRICAL DATA

Insulation Resistance @ 20°C: > 25 MOhm*Km
Test Voltage Core-Core: 2000 V
Test Voltage Core-Screen: 2000 V
Mutual Capacitance: < 150 nF/km
Inductance: < 1 mH/km
Operating Voltage: 300 V

PACKAGE: 100, 500, 1000 mt



These cables can be installed along with power cables marked 450/750 V or 0,6/1 kV operating with systems having maximum voltage to ground 400 V AC



STANDARD REFERENCES

- BS 4737
- IEC 60228
- CEI 20-11
- EN 50363
- CEI UNEL 36762

ON REQUEST

- Armour in SWA, SWB or STA
- Personalized colour code and outer sheath

CPR CLASSIFICATION

EN 50575:2016 - C_{CA} s2, d1, a3

TEMPERATURE RANGE

During Operation:
-30° C up to +80°C

During Installation:
-5° C up to +50°C



CHARACTERISTICS

Alarm Cable



Min. Bending Radius:
10 x cable diameter



Direct Buried



ALARM CABLE

CABLES FOR CIVIL AND INDUSTRIAL SAFETY PLANTS
Standard Version for external use

RAMCRO CODE	FORMATION [n° x AWG]	OUTER DIAMETER [mm]	MAX RESISTANCE AT 20°C [Ohm/km]
SAS0222IDSNA	2x0.22	4.2	122.0
SAS0422IDSNA	4x0.22	4.6	122.0
SAS0622IDSNA	6x0.22	5.1	122.0
SAS0822IDSNA	8x0.22	5.5	122.0
SAS1022IDSNA	10x0.22	6.0	122.0
SAS1222IDSNA	12x0.22	6.1	122.0
SAC02500222IDSNB	2x0.50 + 2x0.22	5.2	53.0 122.0
SAC02500422IDSNB	2x0.50 + 4x0.22	5.7	53.0 122.0
SAC02500622IDSNB	2x0.50 + 6x0.22	6.0	53.0 122.0
SAC02500822IDSNB	2x0.50 + 8x0.22	6.8	53.0 122.0
SAC02501022IDSNB	2x0.50 + 10x0.22	6.9	53.0 122.0
SAC02501222IDSNB	2x0.50 + 12x0.22	7.0	53.0 122.0
SAC02750222IDSNB	2x0.75 + 2x0.22	5.8	36.0 122.0
SAC02750422IDSNB	2x0.75 + 4x0.22	6.2	36.0 122.0
SAC02750622IDSNB	2x0.75 + 6x0.22	6.4	36.0 122.0
SAC02750822IDSNB	2x0.75 + 8x0.22	7.1	36.0 122.0
SAC02751022IDSNB	2x0.75 + 10x0.22	7.2	36.0 122.0
SAC02751222IDSNB	2x0.75 + 12x0.22	7.3	36.0 122.0

CABLE PRINTING : RAMCRO SPA ALARM CABLE FIRE RETARDANT <YEAR> IEC 60332-3-24 EN 50575:2014 + A1:2016 CPR CLASS Cca s2, d1, a3 CEI 20-22 III CEI UNEL 36762 C-4(U₀=400V) <BATCH>

ALARM CABLE

CABLES FOR CIVIL AND INDUSTRIAL SAFETY PLANTS
Standard Version



CONSTRUCTION

Formation:
Plain annealed copper wire

Insulation:
Thermoplastic Low Smoke, Halogen Free - LSZH

Wrapping:
at least 1 layer of plastic tape

Collective Screen:
Alluminium / PETP tape over drain wire

Outer Sheath:
Thermoplastic Low Smoke, Halogen Free - LSZH

Colour Outer Sheath:
White

IDENTIFICATION OF CORES

0,22 mm²:
0,50/0,75 mm²:

ELECTRICAL DATA

Insulation Resistance @ 20°C: > 25 MOhm*Km
Test Voltage Core-Core: 2000 V
Test Voltage Core-Screen: 2000 V
Mutual Capacitance: < 150 nF/km
Inductance: < 1 mH/km
Operating Voltage: 300 V

PACKAGE: 100, 500, 1000 mt



These cables can be installed along with power cables marked 450/750 V or 0,6/1 kV operating with systems having maximum voltage to ground 400 V AC



STANDARD REFERENCES

- BS 4737
- IEC 60228
- CEI 20-11
- EN 50363
- CEI UNEL 36762

ON REQUEST

- Armour in SWA, SWB or STA
- Personalized colour code and outer sheath

CPR CLASSIFICATION

EN 50575:2016 - C_{CA} s1b, d1, a1

TEMPERATURE RANGE

During Operation:
-30° C up to +80°C



During Installation:
-5° C up to +50°C

CHARACTERISTICS

Low Smoke Halogen Free



Min. Bending Radius
8 x cable diameter



Fixed Laying



ALARM CABLE

CABLES FOR CIVIL AND INDUSTRIAL SAFETY PLANTS
Standard Version

RAMCRO CODE	FORMATION [n° x AWG]	OUTER DIAMETER [mm]	MAX RESISTANCE AT 20°C [Ohm/km]
SAS0222GCYKA	2x0.22	3.2	122.0
SAS0422GCYKA	4x0.22	3.6	122.0
SAS0622GCYKA	6x0.22	4.1	122.0
SAS0822GCYKA	8x0.22	4.5	122.0
SAS1022GCYKA	10x0.22	5.2	122.0
SAS1222GCYKA	12x0.22	5.3	122.0
SAC02500222GCYKB	2x0.50 + 2x0.22	4.0	53.0 122.0
SAC02500422GCYKB	2x0.50 + 4x0.22	4.5	53.0 122.0
SAC02500622GCYKB	2x0.50 + 6x0.22	4.8	53.0 122.0
SAC02500822GCYKB	2x0.50 + 8x0.22	5.4	53.0 122.0
SAC02501022GCYKB	2x0.50 + 10x0.22	5.5	53.0 122.0
SAC02501222GCYKB	2x0.50 + 12x0.22	5.7	53.0 122.0
SAC02750222GCYKB	2x0.75 + 2x0.22	4.6	36.0 122.0
SAC02750422GCYKB	2x0.75 + 4x0.22	4.9	36.0 122.0
SAC02750622GCYKB	2x0.75 + 6x0.22	5.3	36.0 122.0
SAC02750822GCYKB	2x0.75 + 8x0.22	6.2	36.0 122.0
SAC02751022GCYKB	2x0.75 + 10x0.22	6.3	36.0 122.0
SAC02751222GCYKB	2x0.75 + 12x0.22	6.5	36.0 122.0

CABLE PRINTING : RAMCRO SPA ALARM CABLE FIRE RETARDANT <YEAR> IEC 60332-3-24 EN 50575:2014 + A1:2016 CPR CLASS Cca s1b, d1, a1 CEI 20-22 III CEI UNEL 36762 C-4(Uo=400V) <BATCH>

ALARM CABLE

CABLES FOR CIVIL AND INDUSTRIAL SAFETY PLANTS
Standard Version for external use



CONSTRUCTION

Formation:
Copper Cladded Aluminium

Insulation:
Thermoplastic Low Smoke, Halogen Free - LSZH

Wrapping:
at least 1 layer of plastic tape

Collective Screen:
Alluminium / PETP tape over drain wire

Outer Sheath:
Thermoplastic Low Smoke, Halogen Free - LSZH

Colour Outer Sheath:
White

IDENTIFICATION OF CORES

0,22 mm2:
0,50/0,75 mm2:

ELECTRICAL DATA

Insulation Resistance @ 20°C: > 25 MOhm*Km
Test Voltage Core-Core: 2000 V
Test Voltage Core-Screen: 2000 V
Mutual Capacitance: < 150 nF/km
Inductance: < 1 mH/km
Operating Voltage: 300 V

PACKAGE: 100, 500, 1000 mt



These cables can be installed along with power cables marked 450/750 V or 0,6/1 kV operating with systems having maximum voltage to ground 400 V AC



STANDARD REFERENCES

- BS 4737
- IEC 60228
- CEI 20-11
- EN 50363
- CEI UNEL 36762

ON REQUEST

- Armour in SWA, SWB or STA
- Personalized colour code and outer sheath

CPR CLASSIFICATION

EN 50575:2016 - C_{CA} s1b, d1, a1

TEMPERATURE RANGE

During Operation:
-30° C up to +80°C
During Installation:
-5° C up to +50°C



CHARACTERISTICS

Low Smoke Halogen Free



Min. Bending Radius
8 x cable diameter



Direct Buried



ALARM CABLE

CABLES FOR CIVIL AND INDUSTRIAL SAFETY PLANTS
Standard Version for external use

RAMCRO CODE	FORMATION [n° x AWG]	OUTER DIAMETER [mm]	MAX RESISTANCE AT 20°C [Ohm/km]
SAS0222IDYKA	2x0.22	4.4	122.0
SAS0422IDYKA	4x0.22	4.8	122.0
SAS0622IDYKA	6x0.22	5.4	122.0
SAS0822IDYKA	8x0.22	5.8	122.0
SAS1022IDYKA	10x0.22	6.4	122.0
SAS1222IDYKA	12x0.22	5.2	122.0
SAC02500222IDYKB	2x0.50 + 2x0.22	5.2	53.0 122.0
SAC02500422IDYKB	2x0.50 + 4x0.22	5.7	53.0 122.0
SAC02500622IDYKB	2x0.50 + 6x0.22	6.0	53.0 122.0
SAC02500822IDYKB	2x0.50 + 8x0.22	6.8	53.0 122.0
SAC02501022IDYKB	2x0.50 + 10x0.22	6.9	53.0 122.0
SAC02501222IDYKB	2x0.50 + 12x0.22	7.1	53.0 122.0
SAC02750222IDYKB	2x0.75 + 2x0.22	5.9	36.0 122.0
SAC02750422IDYKB	2x0.75 + 4x0.22	6.3	36.0 122.0
SAC02750622IDYKB	2x0.75 + 6x0.22	6.7	36.0 122.0
SAC02750822IDYKB	2x0.75 + 8x0.22	7.6	36.0 122.0
SAC02751022IDYKB	2x0.75 + 10x0.22	7.7	36.0 122.0
SAC02751222IDYKB	2x0.75 + 12x0.22	8.1	36.0 122.0

CABLE PRINTING : RAMCRO SPA ALARM CABLE FIRE RETARDANT <YEAR> IEC 60332-3-24 EN 50575:2014 + A1:2016 CPR CLASS Cca s1b, d1, a1 CEI 20-22 III CEI UNEL 36762 C-4(Uo=400V) <BATCH>

COAX CABLE

COAX CABLE

RG 58 C/U 50 Ω

Transmission of dat signals in applications such as antenna feed cables or Ethernet backbones



CONSTRUCTION

Conductor:

Tinned copper wire, multistrand

Dielectric:

Low density polyethylene - LDPE

Braid:

Tinned copper wire braid - Coverage: 90%

Outer Sheath:

Polyvinyl chloride - PVC

Colour Outer Sheath:

Black

CPR CLASSIFICATION

EN 50575:2016 - E_{CA}

ELECTRICAL DATA

Insulation Resistance @ 20°C: > 5000 MOhm*Km
Impedance: 50 Ohm
Capacitance: 100 pF/m
Velocity of Propagation: 66%
Operating Voltage: 300 V

PACKAGE: 100, 500, 1000 mt



These cables can be installed along with power cables marked 450/750 V or 0,6/1 kV operating with systems having maximum voltage to ground 400 V AC



STANDARD REFERENCES

IEC 60332-1

ON REQUEST

- Armor in steel wire (SWA)
- Armor in steel wire braid (SWB)
- Outer Sheath in LSZH
- Double outer sheath (for external use)

TEMPERATURE RANGE

During Operation:
-30° C up to +80°C

During Installation:
-5° C up to +50°C



CHARACTERISTICS

Coaxial Cable



Min. Bending Radius
8 x cable diameter



Fixed Laying



COAX CABLE

RG 58 C/U 50 Ω

Standard Version

RAMCRO CODE	OUTER DIAMETER [mm]	WEIGHT [kg/km]
RG 58	4.9	38

FREQUENCY [MHz]	ATTENUATION [dB/100m]
50	12.6
100	18.1
200	26.5
400	32.5
800	53.4
1000	65.2

ELECTRICAL RESISTANCE AT 20°C	[Ω/km]
Conductor Resistance	41.2

COAX CABLE

RG 174 U 50 Ω

Transmission of data signals in applications such as LAN/WAN or GPS



CONSTRUCTION

Conductor:

Bare copper wire

Dielectric:

Low density polyethylene - LDPE

Braid:

Tinned copper wire braid - Coverage: 90%

Outer Sheath:

Polyvinyl chloride - PVC

Colour Outer Sheath:

Black

CPR CLASSIFICATION

EN 50575:2016 - E_{CA}

ELECTRICAL DATA

Insulation Resistance @ 20°C: > 5000 MOhm*Km
Impedance: 50 Ohm
Capacitance: 100 pF/m
Velocity of Propagation: 66%
Operating Voltage: 300 V

PACKAGE: 100, 500, 1000 mt



These cables can be installed along with power cables marked 450/750 V or 0,6/1 kV operating with systems having maximum voltage to ground 400 V AC



STANDARD REFERENCES

IEC 60332-1

ON REQUEST

- Armor in steel wire (SWA)
- Armor in steel wire braid (SWB)
- Outer Sheath in LSZH
- Double outer sheath (for external use)

TEMPERATURE RANGE

During Operation:
-30° C up to +80°C

During Installation:
-5° C up to +50°C



CHARACTERISTICS

Coaxial Cable



Min. Bending Radius
8 x cable diameter



Fixed Laying



COAX CABLE

RG 174 U 50 Ω

Standard Version

RAMCRO CODE	OUTER DIAMETER [mm]	WEIGHT [kg/km]
RG 174	2.8	15

FREQUENCY [MHz]	ATTENUATION [dB/100m]
50	20.0
100	25.8
200	42.5
400	54.9
800	82.9
1000	97.0

ELECTRICAL RESISTANCE AT 20°C	[Ω/km]
Conductor Resistance	290.0

COAX CABLE

RG 213 U 50 Ω

Transmission of data signals in applications such as antenna feed cables in situations where low signal loss and high operating voltage performance is needed



CONSTRUCTION

Formation:

Bare copper wire, 7 strand

Insulation:

Low density polyethylene - LDPE

Braid:

Bare copper wire braid - Coverage: 90%

Outer Sheath:

Polyvinyl chloride - PVC

Colour Outer Sheath:

Black

CPR CLASSIFICATION

EN 50575:2016 - E_{CA}

ELECTRICAL DATA

Insulation Resistance @ 20°C: > 5000 MOhm*Km

Impedance: 50 Ohm

Capacitance: 100 pF/m

Velocity of Propagation: 66%

Operating Voltage: 300 V

PACKAGE: 100, 500, 1000 mt



These cables can be installed along with power cables marked 450/750 V or 0,6/1 kV operating with systems having maximum voltage to ground 400 V AC



STANDARD REFERENCES

IEC 60332-1

ON REQUEST

- Armor in steel wire (SWA)
- Armor in steel wire braid (SWB)
- Outer Sheath in LSZH
- Double outer sheath (for external use)

TEMPERATURE RANGE

During Operation:

-30° C up to +80°C

During Installation:

-5° C up to +50°C



CHARACTERISTICS

Coaxial Cable



Min. Bending Ra-

dus
8 x cable diameter



Fixed Laying



COAX CABLE

RG 213 U 50 Ω

Standard Version

RAMCRO CODE	OUTER DIAMETER [mm]	WEIGHT [kg/km]
RG 213	10.3	151

FREQUENCY [MHz]	ATTENUATION [dB/100m]
50	4.9
100	6.9
200	9.9
400	13.7
800	20.4
1000	24.9

ELECTRICAL RESISTANCE AT 20°C	[Ω/km]
Conductor Resistance	5.8

COAX CABLE

RG 214 U 50 Ω
Standard Version



CONSTRUCTION

Formation:

Tinned Copper Wire, 7 Strand

Insulation:

Low density polyethylene - LDPE

1° Braid:

Bare copper wire braid - Coverage: 96%

2° Braid:

Bare copper wire braid - Coverage: 98%

Outer Sheath:

Polyvinyl chloride - PVC

Colour Outer Sheath:

Black

CPR CLASSIFICATION

EN 50575:2016 - E_{CA}

ELECTRICAL DATA

Insulation Resistance @ 20°C: > 5000 MOhm*Km
Impedance: 50 Ohm
Capacitance: 100 pF/m
Velocity of Propagation: 66%
Operating Voltage: 300 V

PACKAGE: 100, 500, 1000 mt



These cables can be installed along with power cables marked 450/750 V or 0,6/1 kV operating with systems having maximum voltage to ground 400 V AC



STANDARD REFERENCES

IEC 60332-1

ON REQUEST

- Armor in steel wire (SWA)
- Armor in steel wire braid (SWB)
- Outer Sheath in LSZH
- Double outer sheath (for external use)

TEMPERATURE RANGE

During Operation:

-30° C up to +80°C

During Installation:

-5° C up to +50°C



CHARACTERISTICS

Coaxial Cable



Min. Bending Radius
8 x cable diameter



Fixed Laying



COAX CABLE

RG 214 U 50 Ω
Standard Version

RAMCRO CODE	OUTER DIAMETER [mm]	WEIGHT [kg/km]
RG 214	10.8	209

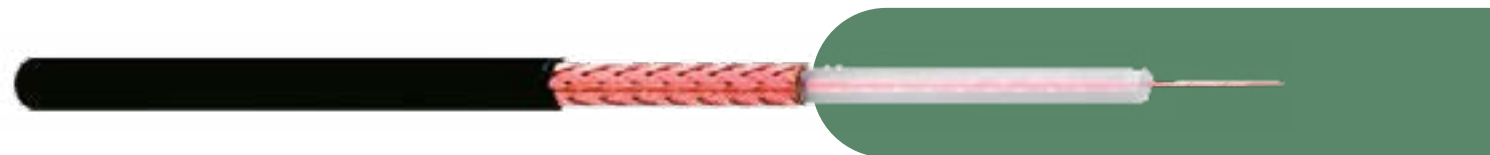
FREQUENCY [MHz]	ATTENUATION [dB/100m]
50	4.5
100	6.7
200	9.9
400	14.3
800	22.5
1000	26.0

ELECTRICAL RESISTANCE AT 20°C	[Ω/km]
Conductor Resistance	6.0

COAX CABLE

RG 59 B/U 75 Ω

Transmission of a video or audio signal in applications such as security systems or CATV



CONSTRUCTION

Formation:

Plain annealed copper wire, solid

Insulation:

Polyethylene - PE

Braid:

Coverage: 88%

Outer Sheath:

Polyvinyl chloride - PVC

Colour Outer Sheath:

Black

CPR CLASSIFICATION

EN 50575:2016 - E_{CA}

ELECTRICAL DATA

Insulation Resistance @ 20°C: > 5000 MOhm*Km
Impedance: 75 Ohm
Capacitance: 66 pF/m
Velocity of Propagation: 66%
Operating Voltage: 300 V

PACKAGE: 100, 500, 1000 mt



These cables can be installed along with power cables marked 450/750 V or 0,6/1 kV operating with systems having maximum voltage to ground 400 V AC



STANDARD REFERENCES

IEC 60332-1

ON REQUEST

- Armor in steel wire (SWA)
- Armor in steel wire braid (SWB)
- Outer Sheath in LSZH
- Double outer sheath (for external use)

TEMPERATURE RANGE

During Operation:

-30° C up to +80°C

During Installation:

-5° C up to +50°C



CHARACTERISTICS

Coaxial Cable



Min. Bending Radius

8 x cable diameter



Fixed Laying



COAX CABLE

RG 59 B/U 75 Ω

Standard Version

RAMCRO CODE	OUTER DIAMETER [mm]	WEIGHT [kg/km]
RG 59	6.1	55

FREQUENCY [MHz]	ATTENUATION [dB/100m]
50	8.8
100	12.2
200	18.1
450	29.0
800	37.8
860	43.3
1000	46.6

ELECTRICAL RESISTANCE AT 20°C	[Ω/km]
Conductor Resistance	66.0

COAX CABLE

RG 59 B/U 75 Ω - MICRO COAX

Transmission of a video or audio signal in applications such as security systems or CATV



CONSTRUCTION

Formation:

Copper clad steel - CCS

Insulation:

Low density polyethylene - LDPE

Braid:

Bare copper wire braid - Coverage: 90%

Outer Sheath:

Polyvinyl chloride - PVC

Colour Outer Sheath:

Black

CPR CLASSIFICATION

EN 50575:2016 - E_{CA}

ELECTRICAL DATA

Insulation Resistance @ 20°C: > 5000 MOhm*Km
Impedance: 50 Ohm
Capacitance: 100 pF/m
Velocity of Propagation: 66%
Operating Voltage: 300 V

PACKAGE: 100, 500, 1000 mt



These cables can be installed along with power cables marked 450/750 V or 0,6/1 kV operating with systems having maximum voltage to ground 400 V AC



STANDARD REFERENCES

IEC 60332-1

ON REQUEST

- Armor in steel wire (SWA)
- Armor in steel wire braid (SWB)
- Outer Sheath in LSZH
- Double outer sheath (for external use)

TEMPERATURE RANGE

During Operation:
-30° C up to +80°C

During Installation:
-5° C up to +50°C



CHARACTERISTICS

Coaxial Cable



Min. Bending Radius
8 x cable diameter



Fixed Laying



COAX CABLE

RG 59 B/U 75 Ω - MICRO COAX

Standard Version

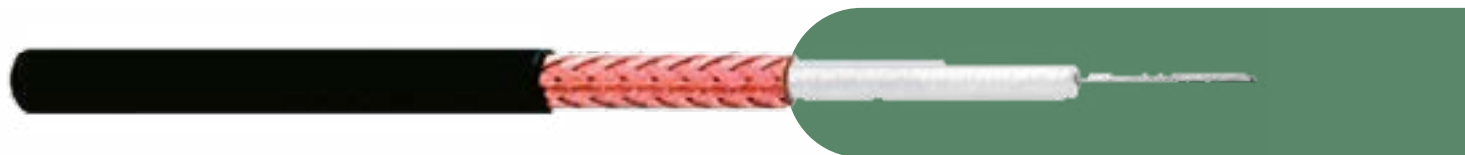
RAMCRO CODE	OUTER DIAMETER [mm]	WEIGHT [kg/km]
RG59MINI-GI-D3	3.6	55

FREQUENCY [MHz]	ATTENUATION [dB/100m]
50	7.7
100	11.2
200	16.0
400	24.1
800	34.0
1000	38.7

ELECTRICAL RESISTANCE AT 20°C	[Ω/km]
Conductor Resistance	148

COAX CABLE

RG 11 B/U 75 Ω
Standard Version



CONSTRUCTION

Formation:

Tinned copper wire, 7 strand

Insulation:

Low density polyethylene - LDPE

Braid:

Bare copper wire braid - Coverage: 90%

Outer Sheath:

Polyvinyl chloride - PVC

Colour Outer Sheath:

Black

CPR CLASSIFICATION

EN 50575:2016 - E_{CA}

ELECTRICAL DATA

Insulation Resistance @ 20°C: > 5000 MOhm*Km
Impedance: 50 Ohm
Capacitance: 100 pF/m
Velocity of Propagation: 66%
Operating Voltage: 300 V

PACKAGE: 100, 500, 1000 mt



These cables can be installed along with power cables marked 450/750 V or 0,6/1 kV operating with systems having maximum voltage to ground 400 V AC



STANDARD REFERENCES

IEC 60332-1

ON REQUEST

- Armor in steel wire (SWA)
- Armor in steel wire braid (SWB)
- Outer Sheath in LSZH
- Double outer sheath (for external use)

TEMPERATURE RANGE

During Operation:
-30° C up to +80°C

During Installation:
-5° C up to +50°C



CHARACTERISTICS

Coaxial Cable



Min. Bending Radius
8 x cable diameter



Fixed Laying



COAX CABLE

RG 11 B/U 75 Ω
Standard Version

RAMCRO CODE	OUTER DIAMETER [mm]	WEIGHT [kg/km]
RG 11	10.3	103

FREQUENCY [MHz]	ATTENUATION [dB/100m]
50	4.5
100	6.5
200	9.5
400	14.1
800	21.9
1000	23.7

ELECTRICAL RESISTANCE AT 20°C	[Ω/km]
Conductor Resistance	25.5

COAX CABLE

RG 62 B/U 93 Ω
Standard Version



CONSTRUCTION

Formation:

Bare copper wire

Insulation:

Low density polyethylene - LDPE

Braid:

Bare copper wire braid - Coverage: 95%

Outher Sheath:

Polyvinyl chloride - PVC

Colour Outher Sheath:

Black

CPR CLASSIFICATION

EN 50575:2016 - E_{CA}

ELECTRICAL DATA

Insulation Resistance @ 20°C: > 5000 MOhm*Km
Impedance: 93 Ohm
Capacitance: 100 pF/m
Velocity of Propagation: 66%
Operating Voltage: 300 V

PACKAGE: 100, 500, 1000 mt



These cables can be installed along with power cables marked 450/750 V or 0,6/1 kV operating with systems having maximum voltage to ground 400 V AC



STANDARD REFERENCES

IEC 60332-1

ON REQUEST

- Armor in steel wire (SWA)
- Armor in steel wire braid (SWB)
- Outher Sheath in LSZH
- Double outhet sheath (for external use)

TEMPERATURE RANGE

During Operation:
-30° C up to +80°C

During Installation:
-5° C up to +50°C



CHARACTERISTICS

Coaxial Cable



Min. Bending Radius
8 x cable diameter



Fixed Laying



COAX CABLE

RG 62 B/U 93 Ω
Standard Version

RAMCRO CODE	OUTER DIAMETER [mm]	WEIGHT [kg/km]
RG 62	6.2	57

FREQUENCY [MHz]	ATTENUATION [dB/100m]
50	5.8
100	8.1
200	11.7
400	16.8
800	24.0
1000	27.3

ELECTRICAL RESISTANCE AT 20°C	[Ω/km]
Conductor Resistance	130

TELEPHONE CABLE

TELEPHONE CABLE

TRR
Standard Version



CONSTRUCTION

- Formation:**
Tinned Copper Claded Aluminium, Solid
- Insulation:**
Polyvinyl chloride - PVC
- Rip Cord:**
Nylon rip cord
- Outer Sheath:**
Polyvinyl chloride - PVC
- Colour Outer Sheath:**
Grey

STANDARD REFERENCES

- CEI 20-29
- CEI 20-11
- CEI UNEL 36762
- CEI 46-5

IDENTIFICATION OF CORES

In according to CEI UNEL 00724

CPR CLASSIFICATION

EN 50575:2016 - E_{CA}

ELECTRICAL DATA

- Insulation Resistance @ 20°C:** > 25 MOhm*Km
- Test Voltage Core-Core:** 2000 V
- Test Voltage Core-Screen:** 2000 V
- Mutual Capacitance:** < 150 nF/km
- Operating Voltage:** 300 V

TEMPERATURE RANGE

- During Operation:**
-30° C up to +80°C
- During Installation:**
-5° C up to +50°C



CHARACTERISTICS

Telephone Cable



Min. Bending Ra-
dius
8 x cable diameter



Fixed Laying



PACKAGE: 100, 500, 1000 mt



TELEPHONE CABLE

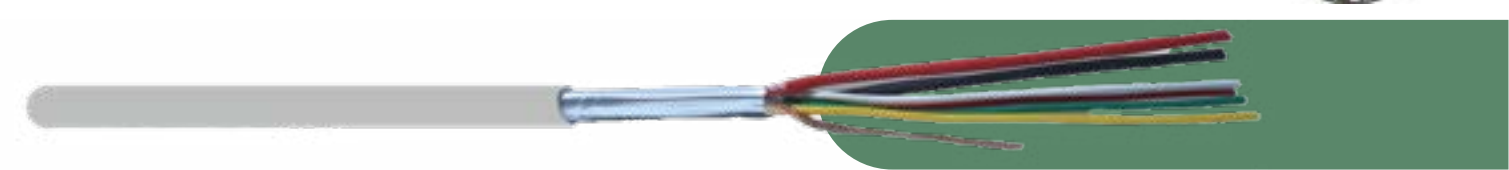
TRR
Standard Version

RAMCRO CODE	FORMATION [n° x mm2]	OUTER DIAMETER [mm]	MAX RESISTANCE AT 20°C [Ohm/km]
TRR1T	1x2x0.60 + T	3.4	134.0
TRR2T	2x2x0.60 + T	4.8	134.0
TRR3	3x2x0.60	5.2	134.0
TRR4	4x2x0.60	5.8	134.0
TRR5	5x2x0.60	6.0	134.0
TRR6	6x2x0.60	7.0	134.0
TRR8	8x2x0.60	7.4	134.0
TRR101	11x2x0.60	8.6	134.0
TRR151	16x2x0.60	10.0	134.0
TRR201	21x2x0.60	11.2	134.0



TELEPHONE CABLE

TRHR
Standard Version



CONSTRUCTION

Formation:
Tinned Copper Claded Aluminium, Solid

Insulation:
Polyvinyl chloride - PVC

Collective Screen
Al/PET (Aluminium/Polyester Tape) with tinned copper drain wire

Rip Cord:
Nylon rip cord

Outer Sheath:
Polyvinyl chloride - PVC

Colour Outer Sheath:
White

STANDARD REFERENCES

- CEI 20-29
- CEI 20-11
- CEI UNEL 36762
- CEI 46-5

IDENTIFICATION OF CORES

In according to CEI UNEL 00724

CPR CLASSIFICATION

EN 50575:2016 - E_{CA}

ELECTRICAL DATA

Insulation Resistance @ 20°C: > 25 MOhm*Km
Test Voltage Core-Core: 2000 V
Test Voltage Core-Screen: 2000 V
Mutual Capacitance: < 56 nF/km
Operating Voltage: 300 V

TEMPERATURE RANGE

During Operation: -30° C up to +80°C
During Installation: -5° C up to +50°C



PACKAGE: 100, 500, 1000 mt



CHARACTERISTICS

- Telephone Cable
- Min. Bending Radius
8 x cable diameter
- Fixed Laying

TELEPHONE CABLE

TRHR
Standard Version

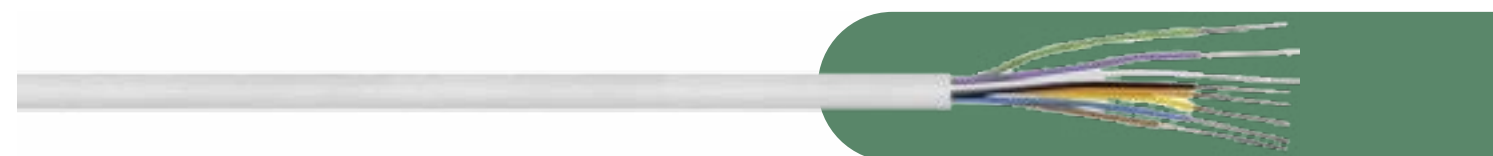
RAMCRO CODE	FORMATION [n° x mm2]	OUTER DIAMETER [mm]	MAX RESISTANCE AT 20°C [Ohm/km]
TRHR1T	1x2x0.60 + T	3.8	134.0
TRHR2T	2x2x0.60 + T	5.2	134.0
TRHR3	3x2x0.60	5.4	134.0
TRHR4	4x2x0.60	6.2	134.0
TRHR5	5x2x0.60	6.3	134.0
TRHR6	6x2x0.60	7.4	134.0
TRHR8	8x2x0.60	7.8	134.0
TRHR101	10x2x0.60 + 1x2x0.60	8.8	134.0
TRHR151	15x2x0.60 + 1x2x0.60	10.2	134.0
TRHR201	20x2x0.60 + 1x2x0.60	11.4	134.0
TRHR251	24x2x0.60 + 1x2x0.60	12.4	134.0
TRHR301	30x2x0.60 + 1x2x0.60	13.4	134.0
TRHR501	50x2x0.60 + 1x2x0.60	16.8	134.0
TRHR100	100x2x0.60	23.4	134.0



ACCESS & CONTROL CABLE

ACCESS & CONTROL CABLE

VCS
Standard Version



CONSTRUCTION

Formation:
Copper Claded Aluminium - CCA, Mul

Insulation:
Polyvinyl chloride - PVC

Rip Cord:
Nylon rip cord

Outher Sheath:
Polyvinyl chloride - PVC

Colour Outher Sheath:
Grey

IDENTIFICATION OF CORES

- Armour in steel wire braid
- Custom colour code and outhter sheath

IDENTIFICATION OF CORES

In according to CEI UNEL 00724

ELECTRICAL DATA

Insulation Resistance @ 20°C: > 25 MOhm*Km
Test Voltage Core-Core: 2000 V
Test Voltage Core-Screen: 2000 V
Mutual Capacitance: < 150 nF/km
Operating Voltage: 300 V

PACKAGE: 100, 500, 1000 mt



STANDARD REFERENCES

- CEI 20-29
- CEI 20-11
- CEI UNEL 36762
- CEI 46-5

ON REQUEST

EN 50575:2016 - E_{CA}

TEMPERATURE RANGE

During Operation:
-30° C up to +80°C

During Installation:
-5° C up to +50°C



CHARACTERISTICS

Access & Control



Min. Bending Ra-
dius
8 x cable diameter



Fixed Laying



ACCESS & CONTROL CABLE

VCS
Standard Version

RAMCRO CODE	FORMATION [n° x mm2]	OUTER DIAMETER [mm]	MAX RESISTANCE AT 20°C [Ohm/km]
VCS0250HDAAC	2x0.50	4.2	83.6
VCS0350HDAAC	3x0.50	4.4	83.6
VCS0450HDAAC	4x0.50	5.0	83.6
VCS0650HDAAC	6x0.50	5.9	83.6
VCS0850HDAAC	8x0.50	6.7	83.6
VCS1050HDAAC	10x0.50	7.6	83.6
VCS1250HDAAC	12x0.50	7.8	83.6
VCS1450HDAAC	14x0.50	8.5	83.6
VCS1650HDAAC	16x0.50	8.8	83.6
VCS0250IDAAC	2x0.50	5.4	83.6
VCS0450IDAAC	4x0.50	6.4	83.6
VCS0650IDAAC	6x0.50	7.1	83.6
VCS0850IDAAC	8x0.50	7.9	83.6

SPE CABLE

Single Pair Ethernet (SPE) was developed for one reason only. It was meant to close the last big gap in a TCP/IP oriented network world – the gap between classic IT and sensor technology, which is becoming more and more important.

Thus SPE is not a replacement technology for existing cable-bound Ethernet networks as are found almost everywhere in IT. Therefore it is not a matter of replacing four-pair cabling, instead it is a matter of accessibly docking sensor/actuator networks to our IT networks. For this reason, SPE is also referred to as an “enabler” for IoT and IIoT.

FUTURE AUTOMATION

Single Pair Ethernet (SPE) is the simple answer to the question of what future automation solutions have to look like so that they can be implemented successfully on the market.

This question stirred up three sectors:



Automotive industry



Industrial automation



Building automation

All three application areas require seamless access to sensor/actuator networks to enable the next stage of their respective automation solutions.

This is the only way to make autonomous driving possible in vehicles, to implement continuous manufacturing processes in line with Industry 4.0, or to achieve intelligent building functionality in building automation.



SOLAR CABLE

The use of these cables is foreseen for the installation of photovoltaic systems e.g., in accordance with HD 60364-7-712. Suitable for application on equipment with protective insulation (Protection Class II). They are inherently short-circuit proof and earth fault proof in accordance with HD 60364-5-52.

They can also be used for photovoltaic installations e.g. in accordance with HD 60364-7-712. Installations not envisaged by the higher classes and where there is no risk of fire and danger to people and/or things (low-risk single installation).

Suitable for permanent indoor or outdoor use, for free mobile, free hanging, and fixed installations. The installation also in ducts and on ducts, inside or under plaster as well as in equipment.

APPLICATION

Solar cables are intended for use in photovoltaic power supply systems and similar applications as free hanging, movable, fixed installation and buried in ground in constructional covered systems

CHARACTERISTICS

Rated voltage:	AC 0.6 / 1.0 kV
Max. PV - System Voltage :	DC up to 2.0 kV possible
Max. Permissible Operating Voltage in AC Systems :	0.7 / 1.2 kV Max.
Max. Permissible Operating Voltage in DC Systems :	0.9 / 1.8 kV
Test Voltage :	AC 6.5 kV / DC 15 kV (15 min.)

STANDARDS

EN 50618:2015

CONSTRUCTION

Conductor
Tinned Copper Conductor acc. IEC 60228 Class 5
Insulation
Halogen free crosslinked polyolefin
Outer Sheath
LSZH (Low Smoke Zero Halogen)
Sheath Color
Black or Red

Core Identification

Insulation colour:
● Red ● Black

Note: Information subject to confirmation



AGRIBUS CABLE

The "Agribus" family has been tested by the **AEF** (*Agricultural Industry Electronics Foundation*) Accredited Laboratory through ENAMA.

The Laboratory have confirmed that the composite cable SSC045002600225HEOAX-AGRIBUS meets all the requirements and parameters of the **ISO 11783:02-2019** standard and can be installed in plants and systems under **ISOBUS** certification.

ISO 11783 specifies a serial data network for control and communication on forestry or agricultural tractors and carried, semi-carried, towed or self-propelled vehicles.

The purpose of the standard is to standardize the method and format of data transfer between sensors, actuators, control elements and information storage and display units mounted on the tractor and also provides an open interconnected system.

It aims to allow electronic control units (ECUs) to communicate with each other, providing a standardized system.

3 DIFFERENT TYPES OF CONSTRUCTIONS:

a) Hybrid cable: $4 \times 0,50 \text{ mm}^2 + 2 \times 6 \text{ mm}^2 + 2 \times 2,5 \text{ mm}^2$

Conductor: Annealed Bare Copper

Insulation: Cross-linked polyolefine and Polyvinyl Chloride (PVC)

Outer Sheath: Polyvinyl Chloride (PVC)

Sheath Color: Black

b) Single paired - $4 \times 20 \text{ AWG}$

Conductor: Annealed Bare Copper

Insulation: Cross-linked polyolefine

Outer Sheath: Polyvinyl Chloride (PVC)

Sheath Color: Black

c) Single paired - $2 \times 20 \text{ AWG}$

Conductor: Annealed Bare Copper

Insulation: Cross-linked polyolefine

Outer Sheath: Polyvinyl Chloride (PVC)

Sheath Color: Black

Electrical values:

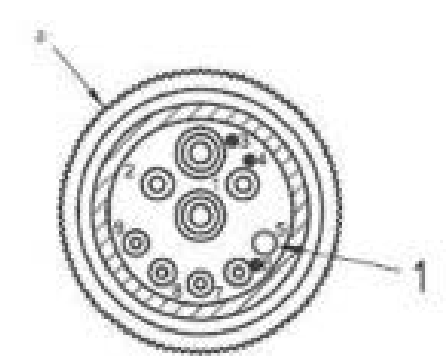
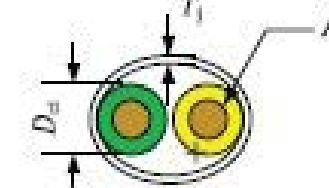
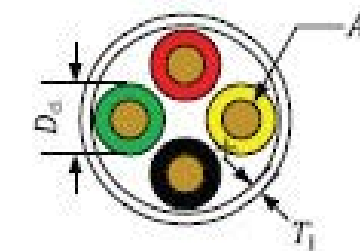
- DC Resistance (6 AWG) 3,4 Ohm/km
- Insulation Resistance (6 AWG): > 25MOhm*km
- Test Voltage C-C: 2000V
- Operating Voltage 450/700V

Temperature:

- During installation: -5°C up to $+50^{\circ}\text{C}$
- Fixed Installation -30°C up to $+80^{\circ}\text{C}$
- Insulation operation -30°C up to $+80^{\circ}\text{C}$

Bending Radius:

- 8 x Cable Diameter





UL 1063 - MACHINE TOOL WIRE

UL 1063 – MTW

Internal Wiring of industrial control equipment, providing reliable performance in power and control circuits up to 600V.



CONSTRUCTION

Formation:

Stranded of Flexible Copper or Aluminium from 18 AWG to 2000kcmil

Insulation:

- Polyvinyl Chloride (PVC) Insulation.
- Polyvinyl Chloride (PVC) Insulation. + Nylon Jacket

ELECTRICAL DATA

Operating Voltage: 600V

CHARACTERISTICS

- Suitable for harsh environments
- Extra flexibility
- High durability
- For Industrial/ Automation application

STANDARD REFERENCES

- UL 1063
- UL 1581
- NFPA 70 (NEC)
- NFPA 79
- UL 758

ON REQUEST

- VW-1
- FT2

TEMPERATURE RANGE

Rated Temperature:
90°C Dry, 60°C Wet

During Installation:
from -5°C to 50°C

Operating temperature:
60°C Dry / 90°C Dry



UL 1063 - MACHINE TOOL WIRE

UL 1063 – MTW

Internal Wiring of industrial control equipment, providing reliable performance in power and control circuits up to 600V.

Size AWG	N. Strands	O. Diam (mils)	O. Diam (mm)	Weight (lbs/1000')	Weight (kg/km)
22	7	91	2,3	6	89,3
20	10	99	2,5	7	104,2
18	16	106	2,7	9	134,0
16	26	117	3,0	13	193,5
14	41	132	3,3	18	267,9
12	65	151	3,8	27	401,8
10	105	175	4,4	40	595,3
8	19	238	6,0	68	1011,9
6	19	306	7,8	110	1637,0
4	19	355	9,0	165	2455,5
3	19	395	10,0	205	3050,7
2	19	417	10,6	247	3675,8
1	833	516	13,1	334	4970,5
1/0	19	532	13,5	398	5922,9
2/0	1330	614	15,6	514	7649,2
3/0	19	617	15,7	602	8958,7
4/0	2109	709	18,0	765	11384,4
250 KCMIL	2451	804	20,4	921	13706,0
350 KCMIL	3458	929	23,6	1284	19108,0
400 KCMIL	259	985	25,0	1392	20715,2
500 KCMIL	5054	1077	27,3	1767	26295,9

CUSTOM MARKING ON REQUEST

Representative marking: RAMCRO S.p.A. – 18 AWG (UL) Listed 1063 TYPE MTW 90°C DRY <month>/<year> <batch>

UL 1276 - WELDING CABLE

Designed for secondary voltage resistance welding leads and power supply applications up to 600V AC, offering High Flexibility and High Durability in harsh industrial environments.



CONSTRUCTION

Formation:
Copper from 8 to 2 AWG and from 1-4/0 AWG

Insulation:
Ethylene Propylene (EP)

Outer Sheath:
EPR

STANDARD REFERENCES

- UL 1063
- UL 1581
- NFPA 70 (NEC)
- NFPA 79
- UL 758

ELECTRICAL DATA

Operating Voltage:

- 600V
- 1000V

CHARACTERISTICS

- Suitable for harsh environments
- Extra flexibility
- High durability
- For Industrial Applications

TEMPERATURE RANGE

Rated Temperature:
90°C Dry, 60°C Wet

During Installation:
from -5°C to 50°C

Operating temperature:
60°C Dry / 90°C Dry



UL 1276 - WELDING CABLE

Designed for secondary voltage resistance welding leads and power supply applications up to 600V AC, offering High Flexibility and High Durability in harsh industrial environments.

Size AWG	O. Diam (In)	O. Diam (mm)
6	0,4	10,2
4	0,5	12,8
2	0,6	15,3
1/0	0,7	17,8
2/0	0,75	19,0
4/0	0,95	24,13

CUSTOM MARKING ON REQUEST

Representative marking: RAMCRO S.p.A. – (UL) Listed 1276 8 AWG 105°C CT USE <month>/<year> <batch>

UL 4703 - PHOTOVOLTAIC WIRE (PW)

Designed for interconnection wiring of solar panels, suitable for indoor and outdoor use, direct burial, and exposure to sunlight and harsh environments, in raceways and conduits. RPVU90 can be used in direct burial installations. They are 90°C, 2 kV rated, and suitable for use in a photovoltaic system. Type RPVU90 cable is for use on the DC and AC side of a photovoltaic system, suitable for installation in both wet and dry locations, and may be exposed to sunlight. Type RPV90 cable is for use on the DC and AC side of a photovoltaic system, suitable for installation in dry locations, and may be exposed to sunlight.



CONSTRUCTION

Formation:

Copper/Aluminium from 18 AWG to 1000kcmil

Insulation:

Cross-linked Polyethylene (XLPE)

STANDARD REFERENCES

- UL 4703
- UL 1685
- CSA C22.2 No. 271
- CSA C22.2 No. 38 - Thermoset-Insulated Wires and Cables
- ASTM B3, B8, B787

ON REQUEST

- Direct Burial
- Sunlight Resistant

ELECTRICAL DATA

Operating Voltage:

- 600V
- 1000V
- 2000V

CHARACTERISTICS

- Suitable for harsh environments
- Moderate flexibility
- Deformation-resistant at high temperatures
- Excellent moisture resistance, exceeds UL 44
- Stable electrical properties over a broad temperature range
- Resistant to crush and compression cuts
- UV / Sunlight-resistant
- Fixed Laying

TEMPERATURE RANGE

Rated Temperature:
90°C wet/ 150°C Dry

During Installation:
from -5°C to 50°C

Working Temperature
-40°C to +90°C



UL 4703 - PHOTOVOLTAIC WIRE (PW)

Designed for interconnection wiring of solar panels, suitable for indoor and outdoor use, direct burial, and exposure to sunlight and harsh environments, in raceways and conduits. RPVU90 can be used in direct burial installations. They are 90°C, 2 kV rated, and suitable for use in a photovoltaic system.

Type RPVU90 cable is for use on the DC and AC side of a photovoltaic system, suitable for installation in both wet and dry locations, and may be exposed to sunlight.

Type RPV90 cable is for use on the DC and AC side of a photovoltaic system, suitable for installation in dry locations, and may be exposed to sunlight.

1000V/2000V RPVU90

Size AWG	Approx. O. Diam. (AL) mm	Approx. O. Diam. (CU) mm	Weight (kg/km) AL	Weight (kg/km) CU
12	/	5.3	/	57.8
10	/	5.9	/	79.9
8	/	7.7	/	130.2
6	8.4	8.6	84	165.7
4	9.5	9.8	113	246.1
2	10.9	11.3	156	366.9
1/0	13.3	14.0	238	576.0
2/0	14.4	14.8	285	706.1
3/0	15.5	16.4	341	876.3

2000V RPV90 AL AA8000

Size AWG	Approx. O. Diam. (AL) mm	Weight (kg/km) AL
6	7.9	74.1
4	9.0	102.0
3	9.6	120.5
2	10.4	143.6
1	12.2	192.5
1/0	13.1	228.6
2/0	14.2	274.0
3/0	15.3	329.6
4/0	16.7	398.8

CUSTOM MARKING ON REQUEST

Representative marking: RAMCRO S.p.A. – UL 4703 (UL) Listed 4703 8 AWG 90°C <month>/<year> <batch>

SE, USE, USE-2, SE-2, SE-U

UL 854 – SERVICE ENTRANCE CABLES

Designed for delivering power from the utility service point to the main distribution panel in residential, commercial, and industrial buildings. They are suitable for above ground or underground installations, depending on the cable type.

CONSTRUCTION

Formation:

Copper/Aluminium from 14 AWG to 1000kcmil

Insulation:

- Cross-linked Polyethylene (XLPE)
- Polyvinyl Chloride (PVC)

Shield:

- Concentric neutral for SE cables

Outer Sheath (Optional)

- Polyvinyl Chloride (PVC)

Colors

SER Phase conductor colors:

3 Cond: ●Black, ●Black/Red

4 Cond: ●Black, ○Black/White, ●Black/Red

5 Cond: ●Black, ○Black/White, ●Black/Red,
●Black/Blue

ELECTRICAL DATA

Operating Voltage: 600V, 1000V, 2000V

CHARACTERISTICS

- Armoured/unarmoured.
- Moisture Resistance insulation for WET Application (USE)
- Rated for 90°C in wet and dry locations. (USE-2)
- For both residential and commercial applications
- Fixed Laying



STANDARD REFERENCES

- UL 854
- UL 1581
- CSA C22.2 No. 271
- ASTM-B-800 and B-801
- UL Standard 854 for SER/SRU
- UL 44 (for USE-2), UL 83 (for SE)

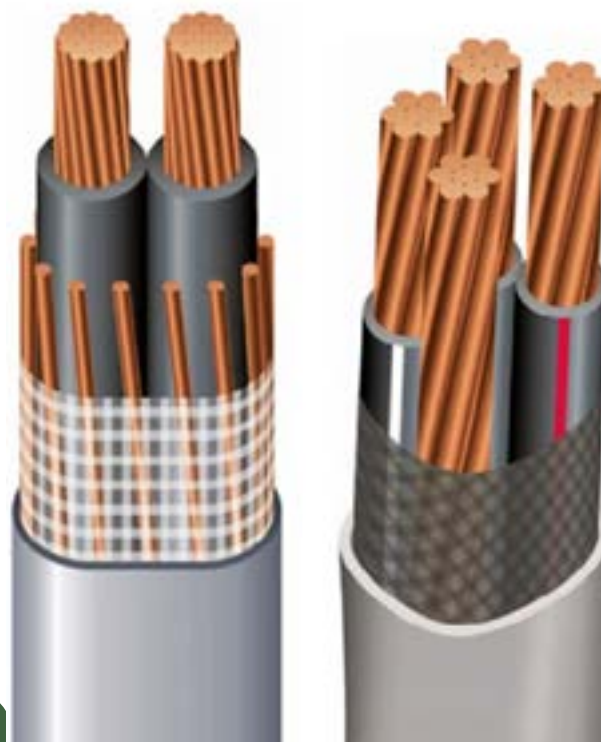
ON REQUEST

- -40°C
- Sunlight Resistant
- Moisture Resistant
- Flame Retardant

TEMPERATURE RANGE

Rated Temperature:
90°C wet/ Dry.

During Installation:
from -5°C to 50°C



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Note: Information subject to confirmation

SE, USE, USE-2, SE-2, SE-U

UL 854 – SERVICE ENTRANCE CABLES

Designed for delivering power from the utility service point to the main distribution panel In residential, commercial, and industrial buildings. They are suitable for above ground or underground installations, depending on the cable type.

Alloy Series

Main Formation (AWG)	Approx. Overall Diameter (mm)	Approx. weight (KG/KM)
8	6,9	48,2
6	7,8	66,9
4	9,1	93,9
2	10,6	135,5
1	12,7	184,7
1/0	13,1	220,4
2/0	14,9	267,7
3/0	16,2	324,2
4/0	17,7	393,9
250	19,6	479,1
300	21,1	560,0
350	22,4	638,0
500	25,7	871,6
600	28,6	1061,9
700	30,4	1215,8
750	31,3	1296,8
1000	35,2	1674,9

CUSTOM MARKING ON REQUEST

Representative marking: RAMCRO S.p.A. – 4 AWG UL 854 (UL) Listed 854 USE 90°C <month>/<year> <batch>



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Note: Information subject to confirmation



EV CABLES FOR FUTURE

EV CABLE CONNECTION FOR CHARGING STATIONS

APPLICATION

The EV RAMCRO Cable is suitable for EV charging unit power and flow monitoring. The cable is a combination of power cores and screened Cat6A data cable offering a solution for quick installation including connection to CTs, eliminating the need to run two separate cables. Suitable for installation in air, clipped to surface, on tray/ladder, embedded in concrete, and for direct burial when mechanical protection is in place.

CHARACTERISTICS

Voltage 0.6/1kV
Test Voltage 5000V
Temperature Rating Fixed: -30°C to +80°C
Minimum Bending Radius 6 x outer diameter

CONSTRUCTION

Conductor
Power Cores: Class 5 flexible stranded Copper
Cat6A Pairs: Class 1 solid Copper

Insulation
Power Cores: XLPE (Cross- Linked Polyethylene)
Cat6A Pairs: HDPE (High Density Polyethylene)

Individual & Collective Screen (Cat6A F/FTP Pairs only)
Al/PET (Aluminium/Polyester Tape) with tinned copper drain wire

Cat6A Sheath
LSZH (Low Smoke Zero Halogen)

Tape and Interstitial Fillers

Outer Sheath
LSZH (Low Smoke Zero Halogen) - UV Resistant

Sheath Color
Black

CABLE WARRANTY

This cable has a warranty period of 25 years

STANDARDS

IEC 60502-1, IEC/EN 60228, TIA/EIA 568-B.10, IEC 61158-5

UV Resistant to EN 50396
Abrasion Resistant to EN 50289-3-7
Low Smoke Zero Halogen according to IEC/EN 61034-1/2, IEC/EN 60754-1/2
Flame retardant according to IEC/EN 60332-1-2, IEC/EN 60332-3-24

REGULATORY COMPLIANCE

This cable is compliant with European Regulation EN 50575, the Construction Products Regulation

This cable meets the requirements of the Low Voltage Directive 2014/35/EU and the RoHS Directive 2011/65/EU.

Core Identification

Power - 3 Cores:
● Blue ● Brown ● Green/Yellow
Power - 4 Cores:
● Blue ● Brown ● Black ● Green/Yellow
Power - 5 Cores:
● Blue ● Brown ● Black ● Grey ● Green/Yellow

Cat6A Pairs:
Pair 1: ● Blue ● White/Blue
Pair 2: ● Orange ● White/Orange
Pair 3: ● Green ● White/Green
Pair 4: ● Brown ● White/Brown

EV CABLE CONNECTION FOR CHARGING STATIONS

Dimension

RAMCRO CODE	N. OF CORES	NOMINAL CROSS SECTIONAL AREA POWER CORES mm2	NOMINAL AWG SIZE CAT6A DATA AWG	NOM. DIAMETER CAT6A mm	NOM. THICK. INS.TION (POWER) mm	NOMINAL OVERALL DIAMETER mm	NOMINAL PULLING TENSION N	NOMINAL WEIGHT kg/km
VCS0325HE-EXM-CL5-FFTP6A	3	2.50	23	6.9	0.7	13.3	434	355
VCS0425HE-EXF-CL5-FFTP6A	4	2.50	23	6.9	0.7	13.9	545	402
VCS0525HE-EXX-CL5-FFTP6A	5	2.50	23	6.9	0.7	14.7	657	450
VCS0340HE-EXM-CL5-FFTP6A	3	4.00	23	6.9	0.8	14.5	609	435
VCS0440HE-EXF-CL5-FFTP6A	4	4.00	23	6.9	0.8	15.4	779	508
VCS0540HE-EXZ-CL5-FFTP6A	5	4.00	23	6.9	0.8	16.5	948	584
VCS0360HE-EXM-CL5-FFTP6A	3	6.00	23	6.9	0.9	16.1	899	560
VCS0460HE-EXF-CL5-FFTP6A	4	6.00	23	6.9	0.9	17.5	1166	662
VCS0560HE-EXZ-CL5-FFTP6A	5	6.00	23	6.9	0.9	19.1	1343	770

Electrical Characteristics

NOMINAL CROSS SECTIONAL AREA POWER CORES mm2	POWER CONDUCTOR DC RESISTANCE AT 20 °C Ω/km	NCAT6A DATA CONDUCTOR DC RESISTANCE AT 20 °C Ω/km	INSULATION RESISTANCE AT 20 °C MΩ/km	MUTUAL CAPACITANCE max nF/km	INDUCTANCE max mH/km	L/R RATIO max uH/Ω	CURRENT CARRYING CAPACITY AT 30°C Amps
2.50	8.3	93.8	1000	140	1	60	26
4.00	5.1	93.8	1000	130	1	60	35
6.00	3.4	93.8	1000	115	1	60	44



LAN Cat. 6 4x2x23AWG + 3x2.50 mm2



LAN Cat. 6 4x2x23AWG + 5x6.0 mm2

The information contained within this datasheet is for guidance only and is subject to change without notice or liability. All the information is provided in good faith and is believed to be correct at the time of publication. When selecting cable accessories, please note that actual cable dimensions may vary due to manufacturing tolerances

FIRE RESISTANT TEST INFORMATIONS



FIRE RESISTANT TEST INFORMATION

In case of fire risk or to maintain circuits integrity, the Ramcro Fire special cables prevent smoke risks and other collateral problems to sensitive equipments, avoiding damage from gases. Ramcro Fire cables are produced according with all major international standards.

Product range under sub-brand RAMFIRECRO-F3 Manufactured according to:

- International Electro-technical Commission IEC 60331-21
- British Standard BS 6387 Cat. C-W-Z
- British Standard BS 7629
- European Norms EN 50200

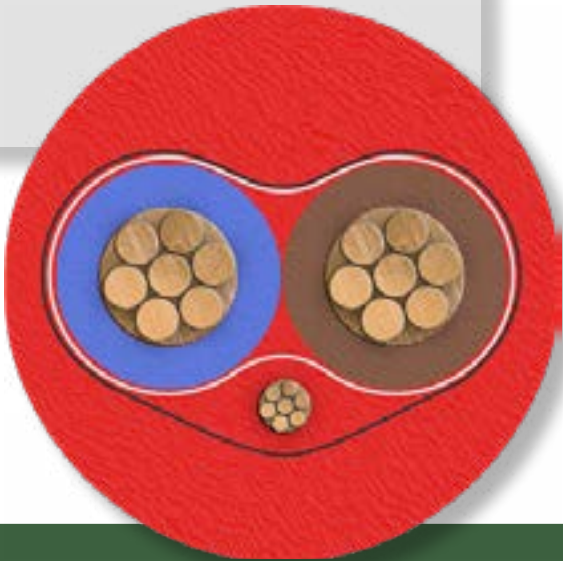
FIRE RESISTANT TEST INFORMATION

Fire Performance Classification:

- Basic Type: IEC 60331-21
- Standard Type: BS 6387 Cat. C-W-Z and BS 7629
- Enhanced Type: EN 50200 PHI20 - BS 8434-2

FIRE SUN CABLE	FIRE STAR CABLE	FLAME TEMPERATURE	TEST ENVIRONMENT	Time	10'	20'	30'	40'	50'	60'	70'	80'	90'	100'	110'	120'		180'
✓	✓	 950°C		BS 6387:2013 Cat. C														180 Min.
✓	✓	 650°C	 	BS 6387:2013 Cat. W			30 Min. 15 Min.											
✓	✓	 950°C	 	BS 6387:2013 Cat. Z			15 Min. 15 Min. (1 impact / 30 sec.)											
✓	✓	 830°C	 	BS EN 50200:2015						PH 60			PH 90			PH 120	15/30/60/90/120 Min. 15/30/60/90/120 Min. (1 impact / 5 Min)	
✓	✓	 830°C	 	BS EN 50200:2015 + Annex E			30 Min. 30 Min. (1 Impact / 5min) 15 Min.											
	✓	 930°C	 	BS 8434-2:2003 + A2:2009													120 Min. 120 Min. (1 impact / 5 Min) 60 Min.	
Fire				Water				Machnical Shock										

RAMCRO IN THE VERY HEART OF GREAT JOBS.



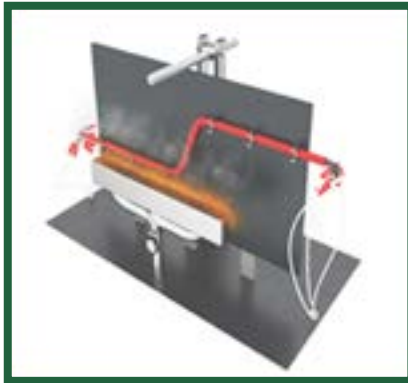
FIRE RESISTANT TEST INFORMATION



FIRE RESISTANCE (Cat. C)
The cable is exposed to fire at the 950°C for 180 minutes



FIRE AND WATER RESISTANCE (Cat. W)
The cable is exposed for 15 minutes to flame at 650°C and for additional 15 minutes to fire and water spray



FIRE RESISTANCE WITH MECHANICAL SHOCKS (Cat. Z)
The cable is mounted on a vertical panel and shocked with a steel bar for 15 minutes while submitted to the action of a flame.

FIRE RESISTANCE (EN 50200 PH 1 5-30-60-90-120)
IEC 60331-2:2018 (Diam <20mm)
IEC 60331-1:2018 (Diam >20mm)

This test is carried out to verify the circuit integrity of cables exposed to fire at 830°C and mechanical shocks.

CLASSIFICATION	
EN 50200 PH 15	Flame exposure for 15 min
EN 50200 PH 30	Flame exposure for 30 min
EN 50200 PH 60	Flame exposure for 60 min
EN 50200 PH 90	Flame exposure for 90 min
EN 50200 PH 120	Flame exposure for 120 min



FIRE RESISTANT TEST INFORMATION

FIRE RESISTANCE
BS EN 50200 annex E



This test is carried out to verify circuit integrity during a fire, The cable is exposed to a flame at 830°C and mechanical shocks for 15 minutes and additional 15 minutes to flame, mechanical shocks, and water spray.

FIRE RESISTANCE
(BS 8434-2)



This test is carried out to verify circuit integrity during a fire. The cable is exposed to a flame at 930°C and mechanical shocks for 60 minutes and additional 60 minutes to flame, mechanical shocks, and water spray.



FIRE RESISTANCE
(IEC 60331-21, CEI 20-36)



This test is carried out to verify circuit integrity even during a fire. A sample of cable is held on a flame at about 750°C for a period of minimum 90 min, under rated voltage.

FIRE RETARDANT TEST INFORMATION

FLAME PROPAGATION TEST (IEC 60332-1)
ON A SINGLE CABLE



A 60 cm long sample of cable is vertically fixed with two clamps inside a small cabin, open on the front. The cable is subjected to the action of a flame produced by a calibrated Bunsen burner.

The application time of the flame is according to the cable diameter (60-480 seconds).

At the end of the test the burnt portion of cable must not be 50 mm close to the higher clamp

FIRE PROPAGATION TEST (IEC 60332-3)
ON BUNCHED CABLES



Samples of cables 3,5 m long in quantities required by standard are installed on a ladder inside a metallic cabinet.

They are subjected to the action of a flame at 750°C for a specific time (20 or 40 minutes).

Cables must not burn for more than 2,5 m.

"Ramcro S.p.A Lab have all the above test facilities"

PRODUCT CERTIFICATES

"Few of our PRODUCTS APPROVAL CERTIFICATES..."



Certificate of Product Approval 568a



Certificate of Product Approval 568c

PRODUCT CERTIFICATES

Certificates of PRODUCTS APPROVAL

"Few of our PRODUCTS APPROVAL CERTIFICATES..."



Certificate of Product Approval 568j



FPLR UL



Certificate of Product Approval 568h

COMPANY CERTIFICATES

Certificates of COMPANY QUALITY SYSTEM



ISO/IEC 17025:2017



ISO 9001:2015



ISO 14001:2015



ISO 45001:2018

CPR REGULATION

CPR Cables (Construction Products Regulation) are essential for ensuring safety in buildings. Regulated by the European Regulation 305/2011, these cables must meet specific fire reaction requirements, reducing the risk of flame propagation and the emission of toxic smoke in the event of a fire.

The CPR classification allows for the selection of the most suitable type of cable based on the installation environment, enhancing the protection of people and property.

Using cables that comply with CPR standards is therefore not only a legal obligation but also a responsible choice for designers, installers, and clients.

RAMCRO has a wide variety of CPR products developed in almost 10 years. In addition, RAMCRO is proud to communicate that it's been among the first movers (2020) in owning a CPR Test Equipment in-house in order to develop our products and fit perfectly your needs

Advantages of High rated CPR Cables

High Rated classified cables offer numerous benefits, especially in environments where fire safety is a top priority. Here are the main advantages:

Reduced emission of toxic gases

This protects both people and electronic equipment, especially in sensitive environments like hospitals, schools, public offices, and critical infrastructure.

Low smoke emission

They produce very little smoke when burning, improving visibility during evacuation and reducing the risk of inhaling toxic substances.

Regulatory compliance

These cables are often legally required in public or high-occupancy buildings, ensuring compliance with European fire safety regulations.

No flaming droplets

They do not release burning droplets that could further fuel the fire or cause burns.



CPR Machine @ RAMCRO



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Note: Information subject to confirmation

US-AMERICAN AND BRITISH UNITS

Conversion of usual measuring units

Units for cables and wires

In the US the measurements are mainly used in AWG-numbers (AWG = American Wire Gauge).

The AWG-numbers conform the british B&S-numbers (B&S = Brown & Sharp)

AWG No.	Cross-section mm²	Diameter mm	Cond. Res. Ohm/km	AWG No.	Cross-section mm²	Diameter mm	Cond. Res. Ohm/km
1000 MCM*	507	25,4	0,035	14	2,08	1,63	8,79
750	380	22,0	0,047	15	1,65	1,45	11,20
600	304	19,7	0,059	16	1,31	1,29	14,70
500	254	20,7	0,07	17	1,04	1,15	17,80
400	203	18,9	0,09	18	0,8230	10,240	23,0
350	178	17,3	0,10	19	0,6530	0,9120	28,3
300	152	16,0	0,12	20	0,5190	0,8120	34,5
250	127	14,6	0,14	21	0,4120	0,7230	44,0
4/0	107,20	11,68	0,18	22	0,3250	0,6440	54,8
3/0	85,00	10,40	0,23	23	0,2590	0,5730	70,1
2/0	67,50	9,27	0,29	24	0,2050	0,5110	89,2
0	53,40	8,25	0,37	25	0,1630	0,4550	111,0
1	42,40	7,35	0,47	26	0,1280	0,4050	146,0
2	33,60	6,54	0,57	27	0,1020	0,3610	176,0
3	26,70	5,83	0,71	28	0,0804	0,3210	232,0
4	21,20	5,19	0,91	29	0,0646	0,2860	282,0
5	16,80	4,62	1,12	30	0,0503	0,2550	350,0
6	13,30	4,11	1,44	31	0,0400	0,2270	446,0
7	10,60	3,67	1,78	32	0,0320	0,2020	578,0
8	8,366	3,26	2,36	33	0,0252	0,1800	710,0
9	6,63	2,91	2,77	34	0,0200	0,1600	899,0
10	5,26	2,59	3,64	35	0,0161	0,1430	1125,0
11	4,15	2,30	4,44	36	0,0123	0,1270	1426,0
12	3,30	2,05	5,41	37	0,0100	0,1130	1800,0
13	2,62	1,83	7,02	38	0,00795	0,1010	2255,0
				39	0,00632	0,0897	2860,0

4/0 is also stated: 0000; 1 mil = 0,001 inch = 0,0254 mm
* for bigger cross-section the sizes in MCM (circular mils)

1 CM = 1 Circ. mil. = 0,0005067 mm²
1 MCM = 1000 Circ. mils = 0,5067 mm²

General measuring units

Lengths

1 mil	= 0,0254 mm
1 in (inch)	= 25,4 mm
1 ft (foot)	= 0,3048 m
1 yd (yard)	= 0,9144 m
1 ch (chain)	= 20,1 m
1 mile (land mile)	= 1,609 km
	= 1760 yards
1 mile (nautical mile)	= 1,852 km
1 mm	= 0,039370 inches
1 m	= 39,370079 inches

Area

1 CM (circ. mil)	= 0,507 · 10 ⁻³ mm²
1 MCM	= 0,5067 mm²
1 sq. inch (sq. inch)	= 645,16 mm²
1 sq. ft. (sq. foot)	= 0,0929 m²
1 square yard	= 0,836 m²
1 acre	= 4047 m²
1 square mile	= 2,59 km²

Density

1 cu. in. (cubic inch)	= 16,39 cm³
1 cu. ft. (cubic foot)	= 0,0283 m³
1 cu. yd. (cubic yard)	= 0,7646 m³
1 gal. (US gallon)	= 3,785 l
1 gal. (brit. gallon)	= 4,546 l
1 US pint	= 0,473 l
1 US quart	= 0,946 l
1 US barrel	= 158,8 l

Temperature

F (Fahrenheit)	= (1,8 · C) + 3°
C (Celsius)	= 0,5556 · (F-32°)

Weight

1 grain	= 64,8 mg
1 dram	= 1,77 g

1 oz (ounce)	= 28,35 g
1 lb (pound)	= 0,4536 Kp
1 stone	= 6,35 Kp
1 qu (quarter)	= 12,7 Kp
1 US-cwt (hundredweight)	= 45,36 Kp
1 US ton (short ton)	= 0,907 t
1 brit. ton (long ton)	= 1,016 t

Force

1 lb	= 4,448 N
1 brit. ton	= 9954 N
1 pdl (Poundal)	= 0,1383 N
1 kp	= 9,81 N
1 N	= 0,102 kp

Velocity

1 mile/h	= 1,609 km/h
1 Knoten	= 1,852 km/h
1 ft/s	= 0,305 m/s
1 ft/min	= 5,08 · 10 ⁻³ m/s

Energy

1 lb/mile	= 0,282 kg/m
1 lb/yd	= 0,496 kg/m
1 lb/foot	= 1,488 kg/m

Radiation absorbed dose

1 Gray	= 1 J/kg
1 rad	= 10 ⁻² J/kg = 1 Centi Gy
	= 0,01 Gy
1 Centi	= 100 Joule
1 rad	= cJ/kg = 0,01Gy
1 Mrad	= 1 · 10 ⁶ cJ/kg

Pressure

1 psi (lb/sq.)	= 68,95 mbar
	= 6,895 · 10 ⁻³ Nmm²
1 lb/sq. ft.	= 0,478 mbar
1 pdl/sq. ft.	= 1,489 N/m²
1 in Hg	= 33,86 mbar
1 ft H2 O	= 29,89 mbar
1 in H2 O	= 2,491 mbar
1 N/mm2	= 145 psi
	= 10 bar
1 kp/mm2	= 1422 psi
1 at	= 736 Torr
	= 1 kp/cm²
1 Torr	= 1 mm Hg
1 bar	= 0,1 H Pa
1 Pa	= 1 N/m²

Density

1 lb/cu. ft.	= 16,02 kg/m³
1 lb/cu. in.	= 27,68 t/m³

Horse power

1 hp · h	= 1,0139 PS · h
	= 2,684 · 10 ⁶ Joule
	= 746 W · h
	= 1055 Joule

1 BTU (brit. therm. unit)	
1 hp	= 0,7457 kW
1 kW	= 1,31 hp

Electrical units

1 ohm/1000 yd	= 1,0936 /km
1 ohm/1000 ft	= 3,28 /km
1 µF/mile	= 0,62 µF/km
1 megohm/mile	= 1,61 M/km
1 µF/foot	= 3,28 pF/m
1 decibel/mile	= 71,5 mN/m

Power rate

1 PS	= 0,736 kW
1 kW	= 1,36 PS



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Note: Information subject to confirmation

CODE-DESIGNATION

Explanations for Cables and Insulated Wires

A-	Outdoor cable	(N)	in adapted to VDE standard
A	approved national design	NC	non-corrosiv, smoke-gase
AB	Outdoor cable with lighting protection	NF	natural colour
AD	Outdoor cable with differential protection	-O	cable without green-yellow earth core
AJ-	Outdoor cable with induction protection	-OZ	cable without green-yellow earth core and cores with imprinted numbers
ASLH	self-supporting communication cables for high voltage overhead lines	ö	oil-resistant
B	armouring	02Y	Foam-PE, insulation (cellular PE)
B	spinning of textile yarn	Q	Steel wire braiding
b	armouring	(R...)	round wire, diameter in mm
(1B...)	one layer of steel tape... thickness of the steel tape in mm	RAGL-	Compensating cable for thermocoupling
(2B...)	two layers of steel tape... thickness of the steel tape in mm	RD-	Rhenomatic cable
BD	unit-type stranding	RE	Computer cable
BLK	bare copper-conductor without insulation	RG-	Coaxial cable according MIL specification
BZ	bronze conductor	re	round, single wire
C	screen of copper wire braiding	rm	round, multiwire
C	screen of copper wire spinning	RS-	computer switchboard cable
C	outer protection of jute and viscous compound	S	silk whipping
Cu	copper wire	S	signal cables for railways
(-Cu)	total cross-section of copper screens (mm2)	(S...)	nominal value of mutual capacitance (nF /km)
D	screen of copper wires	-S	signal cable for German Railway
(D)	screen of helically applied copper wires	S-	Switchboard cable
DM	Dieselhorst-Martin quad	SL	flexible sheathed cable
Dreier	three cores in triple stranded	2S	two layers of silk whipping
E	copper drain wire	St	star quad for phantom circuits
E(e)	protective covering of viscous compound with embedded layer of plastic tape	St I	star quad in telephone cables for lager distance
e	single wire, solid	St III	star quad in local cables
F	cable cores assembly with petrol-jelly	(St)	static screen
F	foil wrapping	Staku	copper clad steel wire
F	Flat cable	Staku-Li	copper clad steel stranded wires
F	star quad for railway cable	...t	termite protection
F	star quad for phantom circuits	T	supporting element for overhead cable
(F...)	flat wire armouring... thickness in mm	T-	fan out cable
OF	jelly lled cable core, lling compound of hard substances	TF	carrier frequency of pairs or quads triple
FR	flame retardant	TiC	triple in copper wire braid
f	exible, fine wire stranding	TiMF	triple in metal foil
ff	extra fine wire stranding	U	braiding of textile fibres
G	insulation or sheath material of rubber (NR) or (SBR)	VGD	gold-plated
G-	Mining cable	VN	ickel-plated VS silver-plated
GJ	Mining cable with induction protection	VZK	galvanized VZN tinned
GS	glass fibre whipping or braiding	W	corrugated steel sheath
2G	insulation or jacket of silicone rubber, (SIR)	W	high heat resistant
3G	insulation or jacket of ethylene propylene rubber, (EPR)	W	corrugated steel sheath
4G	insulation or jacket of ethylene vinylacetate rubber (EVA)	X	cross-linked polyvinylchlorid (X-PVC) or other materials
5G	insulation or jacket of chloroprene rubber (CR)	XPE	cross-linked polyethylene (X-PE)
6G	insulation or jacket of chlorosulphonated polyethylene	2X	cross-linked polyethylene
(CSM),	Hypalon	7X	cross-linked Ethylentetrafluorethylen (X-ETFE)
7G	insulation or jacket of Flouroelastomer (FKM)	10X	cross-linked Polyvinylidenfluorid (X-PVDF)
8G	insulation or jacket of Nitrile rubber (NBR)	Y	PVC, polyvinylchloride
9G	PE-C rubber (CM)	Yu	PVC, polyvinylchloride, non-flammable, flame-retardant
53G	CM, chlorinated Polyethylene	Yv	PVC, polyvinylchloride, with reinforced sheath
H	insulation or jacket of halogen-free compound	YV	Equipment wires with tinned conductor
H	Harmonized Documents	Yw	PVC, polyvinylchlorid, heat resistant upto 90°C
(H...)	maximal value of mutual capacitance (nF /km)	2Y	Polyethylene (PE)
(HS)	semi-conducting tape of layer	2Yv	Polyethylene, reinforced sheath
HX	cross-linked, halogen-free polymer compound	02Y	Cellular polyethylene
...IMF	individual stranding element (pairs or single cores etc.)	02YS	insulation of cellular polyethylene with outer PE-skin
IMF	several stranding elements in metalfoil and drain wire	2YHO	insulation of air-spaced polyethylene
-J	cable with green-yellow earth core	3Y	insulation polystyrene (PS), Styroflex
-JZ	cable with green-yellow earth core and cores with inprinted numbers	4Y	insulation or jacket of polyamide (PA)
K	copper-tape	5Y	insulation or jacket of polytetrafluorethylene (PTFE)
(K)	inner sheath and longitudinally folded copper tape	5YX	Perfluoralkoxy (PFA)
LA	tinsel conductor (flat copper wire stranded over the thread of synthetic fibres)	6Y	Perfluoroethylene-propylene (FEP)
LD	corrugated aluminium sheath	7Y	insulation or jacket of ethylentetrafluorethylen (ETFE)
Lg	in layers stranding	8Y	insulation of polyimid (PI)
Li	stranded wires conductor	9Y	polypropylen (PP)
(L)Y	laminated sheath Al-tape and PVC-jacket	10Y	PVDF, Polyvinylidene fluoride
(L)2Y	laminated sheath Al-tape and PE-jacketl	11Y	polyurethan (PUR)
2L	double enamel coating as insulation	12Y	TPE-E, TPE
M	plastic-sheath cable	13Y	TPE-EE, TPE on base of Polyester-Ester
M	lead sheath	31Y	TPE-S, TPE on base of Polystyrol
Mz	alloyed lead sheath	41Y	TPE-A, TPE on base of Polyamide
(mS)	magnetic shield	51Y	PFA, Per uor-Alkoxylalkane
N	VDE standard	71Y	ECTFE, Monochlortrifluorethylene
		91Y	TPE-O, TPE on base of Polyester-Ester
		-Z	core imprinted with numbers
		Z	twin cable
		(Z)	high-tensile braid of steel wires
		(ZG)	high-tensile element of glass fibre yarn
		(ZN)	high-tensile of non-metallic elements

DIN 47100

- Core 1:  White
- Core 2:  Brown
- Core 3:  Green
- Core 4:  Yellow
- Core 5:  Grey
- Core 6:  Pink
- Core 7:  Blue
- Core 8:  Red
- Core 9:  Black
- Core 10:  Violet
- Core 11:  Grey/Pink
- Core 12:  Red/Blue
- Core 13:  White/Green
- Core 14:  Brown/Green
- Core 15:  White/Yellow
- Core 16:  Yellow/Brown
- Core 17:  White/Grey
- Core 18:  Grey/Brown
- Core 19:  White/Pink
- Core 20:  Pink/Brown
- Core 21:  White/Blue
- Core 22:  Brown/Blue
- Core 23:  White/Red
- Core 24:  Brown/Red
- Core 25:  White/Black
- Core 26:  Brown/Black
- Core 27:  Grey/Green
- Core 28:  Yellow/Grey
- Core 29:  Pink/Green
- Core 30:  Yellow/Pink
- Core 31:  Green/Blue
- Core 32:  Yellow/Blue
- Core 33:  Green/Red
- Core 34:  Yellow/Red
- Core 35:  Green/Black
- Core 36:  Yellow/Black
- Core 37:  Grey/Blue
- Core 38:  Pink/Blue
- Core 39:  Grey/Red
- Core 40:  Pink/Red
- Core 41:  Grey/Black
- Core 42:  Pink/Black
- Core 43:  Blue/Black
- Core 44:  Red/Black
- Core 45*:  White/Brown/Black
- Core 46*:  Yellow/Green/Black
- Core 47*:  Grey/Pink/Black
- Core 48*:  Red/Blue/Black
- Core 49*:  White/Green/Black
- Core 50*:  Brown/Green/Black

* Starting from conductor No. 45, it is possible to request either the version where the color sequence restarts from No. 1, or the two-tone + black option. If no specific request is made, Option 1 will be applied by default.



Note: Information subject to confirmation

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HANDLING, STORAGE AND LAYING OF CABLES

Great care is taken in the manufacturing of cables to ensure quality at every stage.

- Handling is the next important factor to ensure that by poor workmanship and mishandling the quality does not deteriorate.
- Of course laying is generally carried out by unskilled or semi-skilled men, strict supervision should be maintained so that this material, which can be very easily damaged, is handled with great care.
- If great care during installation is observed in the handling of cables on site the life of the cables is extended.

A. CABLE INSPECTION

1. Inspect every cable reel for damage before accepting the shipment. Be particularly alert for cable damage if:
 2. A reel is lying flat on its side
 3. Several reels are stacked one over the other
 4. Other freight is stacked on a reel
 5. Cable drums are without planks or broken
 6. Nails have been driven into reel flanges to secure shipping blocks
 7. A reel flange is damaged
 8. A cable covering is removed, stained or damaged
 9. A cable end seal is removed or damaged. A reel has been dropped (hidden damage likely)

B. CABLE HANDLING & STORAGE

Damage to cables can occur due to the incorrect handling to which the drums and cables may be subjected; causing breakdown of the drum flanges and in exceptional cases, movement of the drum barrel takes place. Once this breakdown of the drum occurs, the cable is immediately exposed to damage. Cables damaged during handling & storage can cause service failures when the subject cable is put to use.

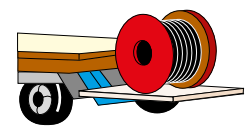
Thus the following is a list of Do's and Don'ts that should be followed while handling and storing the cables before it is put to use.



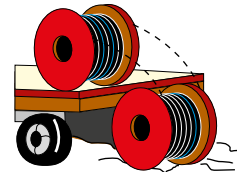
DO's



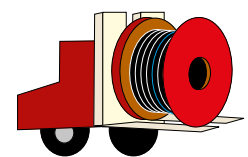
DON'ts



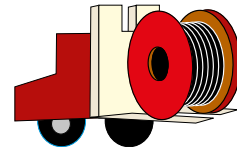
When off loading reels from a truck, lower reels carefully using a hydraulic gate, hoist or forklift truck.



Never drop reels. If reels must be rolled, roll in opposite direction of the cable wraps to keep cable from loosening on the reel.



If a fork lift is used, approach the reel from the flange side. Position the forks such that the reel is lifted by both reel flanges. Also Consideration should be given to, Traffic patterns during off-loading & damage during the time in storage.



Do not allow the lift forks to contact the cable. Care must be taken by the fork lift operator not to make sudden turns or stops.

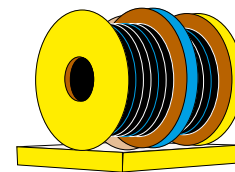
HANDLING, STORAGE AND LAYING OF CABLES



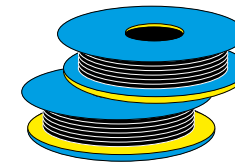
DO's



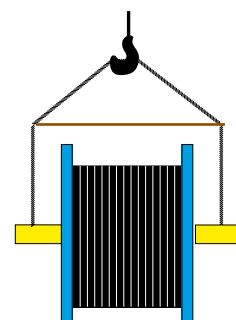
DON'ts



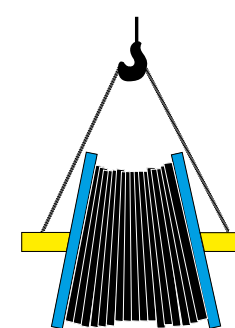
Cable reels should be stored on hard surfaces resting on the flanges edge (flanges vertical). Align reels flange to flange and, if possible, arrange so that first in is first out.



Multiple reels stacked on top of each other ("Pancake" storage) is not recommended for cable drums. The weight of the stack can total thousands of Kgs. creating an enormous load on the bottom reel. Also, damage to the reel and/or cable will likely occur when the reel is flipped for transit. A concentration of stress on the reel flange may cause it to break and subsequently damage the cable.



When using a hoist, install a mandrel through the reel arbor holes and attach a sling. Use a spreader bar approximately 6 inches longer than the overall reel width placed between the sling ends just above the reel flanges.



This may lead to the bending of the reel flanges and mashing the cable.

C. RECOMMENDED MINIMUM BENDING RADIUS FOR LV CABLES

Single Core: $15xD$

Multicore : $12 \times D$

Where D= Diameter of cable in mm

D. INSTALLATION & LAYING

Mechanical stresses during installation are generally more severe than those encountered while in service. Thus care should be taken as regards to the following while installation and laying of cables.

1. Care shall be taken during laying to avoid sharp bending, and twisting.
2. Cable shall be unwound from the drum by lifting the drum on the center.
3. Shaft supported both ends with suitable jacks / stands.
4. Under no circumstances the cable winding shall be lifted off a coil or drum lying flat at the flanges. This would cause serious twist and damages.
5. Suitable protection shall be provided to the cables against mechanical damages, it includes covers, pipes etc.

E. PRE- INSTALLATION

To ensure safety during cable installation, following shall be checked prior to installation.

1. The cable selected is proper for designed application.
2. The cable has not been damaged in transit or storage.

Review all applicable state and national codes to verify that the cable chosen is appropriate for the job. Also consult your local electricity authority. Next, you must identify any existing cable damage and prevent any further damaged from occurring. This is done through proper cable inspection, handling and storage.

HANDLING, STORAGE AND LAYING OF CABLES

F. RECOMMENDED SAFE PULLING FORCE WHENPULLED WITH PULLING EYE:

- a) For Aluminum Conductors : 30 N/mm2
- b) For Copper Conductor :50 N/mm2

G. RECOMMENDED SAFE PULLING FORCE WITH STOCKINGS:

- a) For Unarmoured Cable : $P=5 D^2$
Where P= Pulling Force
- b) For Armoured Cable : $P=9 D^2$
Where D= Diameter of cable inmm

SPECIAL PRECAUTIONS FOR HANDLING / INSTALLATION OFLOW SMOKE SHEATHED CABLES

Cables like LSF sheath needs to be handled with care during installation. While special additives are used in formulation of

LSF compound to give the typical flame retardant characteristics of Zero Halogen Polymers some me-
chanical properties deteriorate. The following basic precautions are necessary.

Cables should not be exposed to sunlight for consider able period before installation i.e. the temp of
cables sheath should be below 45°C.

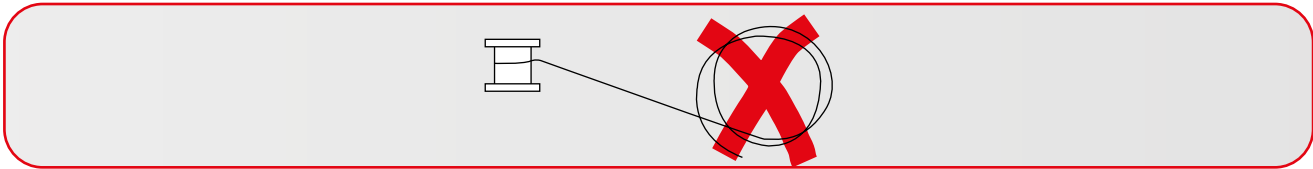
Preferably installation is done during morning hours when the ambient temperature is low.

Wire/ropes should not be used directly on the cable sheath for pulling.

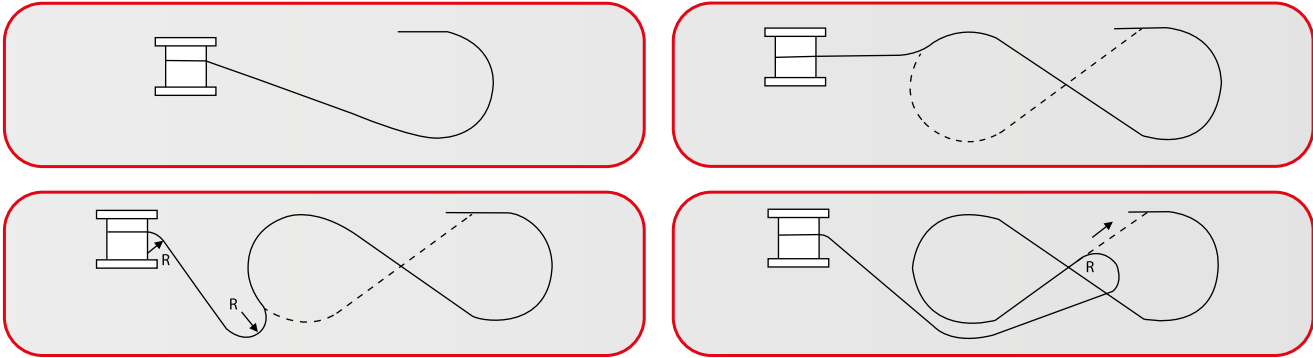
When pulled on cable trays/or any uneven surface, special attentions is needed to welding or unusually
rough terrains.

Rollers and bends should not have any sharpness which may damage sheath.

DO NOT ATTEMPT "COILING" OF CABLE ON THE GROUND



ON THE GROUND CABLE CAN BE FLAKED IN A FIGURE OF EIGHT FORMATION



QD 06/01

Note: R Minimum Permissible bending radius of cable.

Edited by RAMCRO S.p.A. on January 2023

NOTE

**"WE SUPPLY
WORLDWIDE"**







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