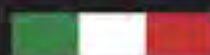




ramcro

special cables



SPECIAL



CABLES

Worldwide Preview

ADIPEC 2025 Abu Dhabi

Single Mode / Multi mode

Fiber Optic - Enhanced Fire Resistant

CONSTRUCTION

1. Fibers:

Up to 24 optical, Color coded following TIA/EIA 598 for easy identification

2. Tube:

Central tube filled with Jelly and covered by a Fire Resistant Mica Tape

3. Fiberglass Reinforcement:

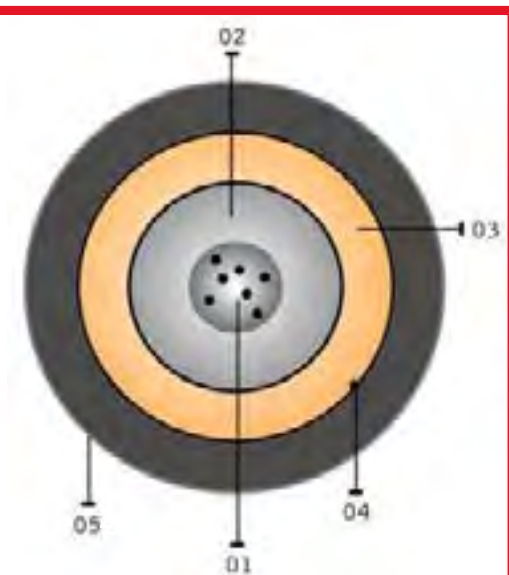
Dry, water swelling glass yarn is laid over the tubes to serve as peripheral strength members and to block the cable from water penetration, with overall Fiber Glass Tape.

4. Ripcord:

laid under the jacket for easy removal.

5. Sheath:

A UV-resistant, Halogen Free, Flame-Retardant (HFFR) jacket extruded over the armoring.



DESCRIPTION

- Indoor/Outdoor installation
- For installation in conduits, cable trays, ducted or directly buried
- Armored or Not Armored
- Flame and Fire retardant
- Halogen Free, Low smoke emission
- Oil and Hydrocarbon Resistant (EN 60811-404, ENI 0181)
- Available also with SHF2 Jacketing

REFERENCE STANDARD

Flame spread:

IEC 60332-1-2

Smoke opacity:

IEC 61034-2 / EN 50268-2

Smoke toxicity:

IEC 60754-1 / 2 EN 50267-2-1

Spread of fire:

IEC 60332-3-22

CPR

EN 50575 Dca, s2,d2,a1

Fire resistance:

BS 8434-2, 120min, 930°C

IEC 60331-25, 180min, 750°C

EN 50200 PH120, 120min, 830°C

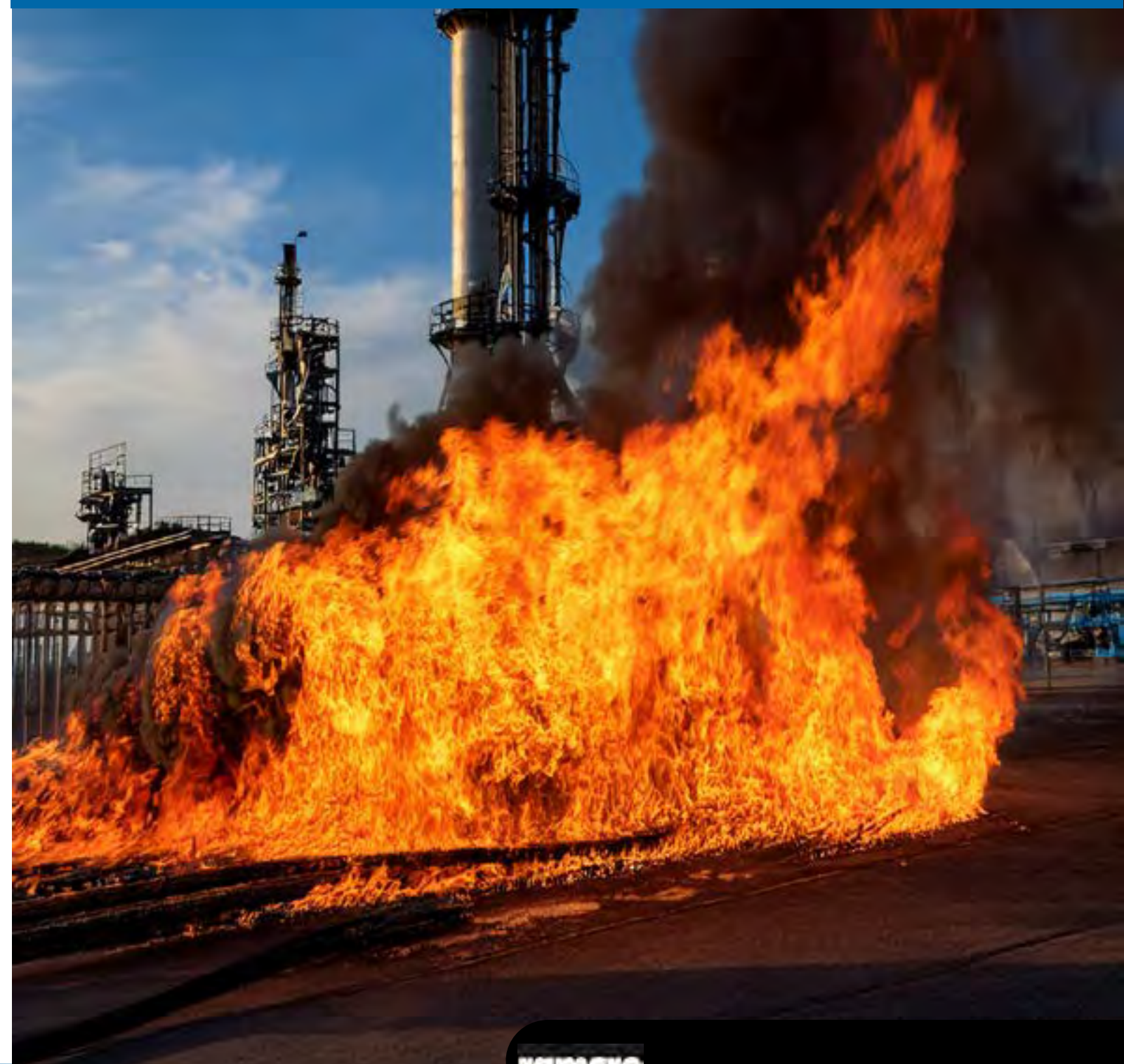
EN 50200 ANNEX E, 30min, 830°C

Worldwide Preview

ADIPEC 2025

Single mode / Multi Mode

Fiber Optic - Enhanced Fire Resistant



APPLICATIONS



Infrastructure



Railways



Oil&Gas and Petrolchemicals



Marine & Offshore



Telecommunication



Optical



Data,Control and BMS



Defence

UL CABLES CONTENTS

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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.

ABOUT COMPANY

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

New Interlock Armoring Machine (AIA):

In 2025, Ramcro S.p.A. proudly expanded its production capabilities with the installation of a state-of-the-art Interlock Armoring Machine (AIA). This strategic investment places Ramcro among a select group of European manufacturers capable of performing this advanced cable armoring process.

The new AIA machine is designed to work with copper, steel, and aluminum tapes, enabling the production of cables that combine high mechanical and UV protection with exceptional flexibility. This opens the door to new cable designs tailored for demanding industrial environments, infrastructure applications, and specialized installations.

With this addition, Ramcro reinforces its commitment to innovation, quality, and technical excellence, offering customers cutting-edge solutions that meet the highest standards of performance and reliability.



A Strategic Leap Forward for Ramcro S.p.A.

Armor Type		Mechanical Protection	Flexibility	UV Resistance	Typical Applications
SWA	Galvanized steel wires	● ● ● ●	● ●	● ●	Underground power cables; Industrial environments
	Braided steel wires	● ● ●	● ● ● ●	● ●	Control cables; Vibration-prone areas
STA	Steel Tape Armour	● ● ●	● ● ●	● ● ● ●	Fixed installations; Impact protection
	Interlock Armour Shaped metal tape (Copper, Steel, Aluminum)	● ● ● ●	● ● ● ●	● ● ● ●	Industrial settings; Tray installations. Used also as Metallic Jacket
Corrugated Armor		● ● ● ●	●	● ● ● ●	Harsh environments; Crush resistance

“RAMCRO,
SPECIAL CABLES FOR SPECIAL NEEDS”



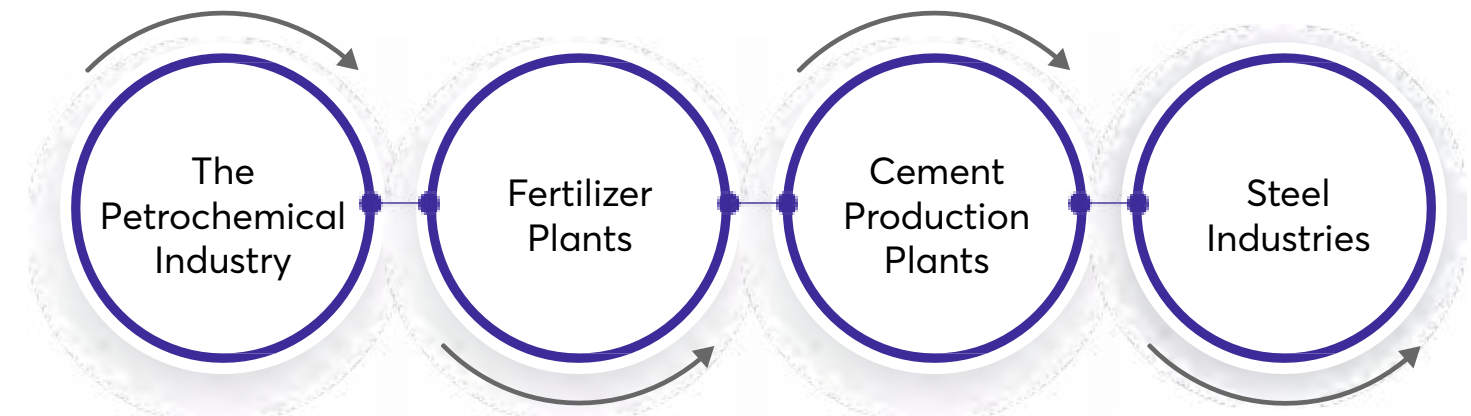


INSTRUMENTATION CABLE

Guide line for Instrumentation Cable Selection Process

An instrumentation cable plays a critical role in various manufacturing and processing projects. It is not easy to observe and control electricity systems and their supplementary processes without this cable. It transmits low-energy signals that you can use to regulate or keep an eye on various crucial functions that rely on electronic circuits.

State-of-the-art wireless transmission mediums have simplified signal broadcasts. People are accustomed to transmitting and receiving information wirelessly. Most of us lack meaningful knowledge on shielded instrument cable because we live in a world where wireless transmissions are trending. This cable transmits signals in electric circuits and is pertinent across various industries, including;



This post provides some meaningful information you ought to know, including types of instrumentation cables. Are you keen to find the best signal-transmitting wire that offers protection against interruption and interference? This is the best place to be.

What is an instrumentation cable?

An instrumentation cable is a cable that consists of several conductors whose purpose is to convey low-energy electric signals. Cables and electrical wires take up a plethora of responsibilities in various industrial applications. For example, they transmit electrical power, signals, or data. Generally, a cable is structured depending on its intended application and is equipped with different forms of protective elements.

Instrumentation cable manufacturers build these cable types to offer adequate shielding against any form of external signal interference. Their core function is to monitor and regulate various electric systems and their associated processes. Essentially, they assist in facilitating the smooth functioning of different industrial processes. It is also crucial to note that these cable types are typically applicable in microprocessor grounded and computer-based instrumented systems.



These cables come in handy in many control and communication applications because they are immune to external interruptions and interferences. They come in handy in process regulation, relay of analog or digital signals, voice transmissions, signal relays, and control circuitry. It would be best to settle for a flexible instrumentation cable due to the nature of its applications. This is the best cable to go for if you desire a signal transmission cable for the process, petrochemical, fertilizer and steel industries.

What is an instrumentation cable?

Typically, instrumentation cables are applicable in a wide array of industries. They are suited for harsh environments and have outstanding electrical, thermal, and corporeal features. However, they come in different assortments depending on insulation material and mode of shielding. Here is a comprehensive outline of different instrumentation cable types;

(1) PVC instrument cable (individual and overall shielded variants)

As the name suggests, this cable variation comprises a Polyvinyl Chloride (PVC) outer coating. PVC is arguably the most popular thermoplastic insulation material owing to its impeccable features. The material is characteristically resistant to fire, any form of scrape, and moisture. The cable's conductor material is copper, which is known for its top-notch electrical conductivity. More importantly, it meets several essential cable construction standards, including BS- EN-50288.

(2) XLPE instrument cable (individual and overall shielded variants)

The XLPE instrumentation cable is constructed with top-of-the-line thermal and moisture resistant cross-linked polyethylene material. This type of insulation material features strong molecular three-dimensional bond structures. The wire can withstand any form of external adversity, including exposure to UV rays and oil. Like the PVC instrumentation cable, the cable's construction consists of highly flexible stranded copper conductors for maximum electrical conductivity.

Regardless of the instrumentation cable types you opt for. You have to remember that there are different shielding methods. The shielding variations for this type of cable include;

(3) Overall Shielded Pairs/Triads

(4) Individual Shielded Pairs/Triads

What is the difference between instrumentation cable and control cable?

Most people, especially those that lack electrical cable expertise, confuse an instrumentation-type cable with a control cable. This confusion often arises because control wires belong to the instrumentation cable family. It is important to remember that there are some vital differences between these two cables when shopping for an ideal option.

The core difference between these cables rests in their usage. Control cables are typically helpful in situations that require larger wires that can withstand colossal electrical currents. Unlike KVV cables, instrumentation-type cables have a smaller diameter and have stranded conductors that guarantee maximum flexibility. Consequently, it is advisable to go for a flexible instrumentation cable if you intend to perform wiring applications that require maximum flexibility.

Also, instrumentation cables have shields to stop any electromagnetic interference that might impair their functionality. Generally, there are two types of shielding that cable manufacturers use: foil-type shielding and braid-type shielding. Unlike a control cable whose circuit does not require shielding, a shielded instrumentation cable is vital for all instrumentation applications.

Which instrumentation cable is ideal for the chemical and fertilizer industry

Apart from the instrumentation cable size, you ought to consider the cable type when selecting an ideal choice. Most people find it challenging to pick out the perfect option for the chemical and fertilizer industry. Typically, cables used in these industries face several hazards. There are two types of instrumentation cables, namely, PVC and XLPE. So, which is the ideal instrument cable option for the chemical and fertilizer industry?

It would be best to use a PVC instrument cable for such environments. Polyvinyl Chloride is a thermoplastic material generated through the polymerization process. This process produces insulation material resistant to flames, fires, repeated abrasions and moisture.

PVC is also known for being lightweight, resistant to corrosion, weathering and chemicals. Consequently, a PVC insulated cable is the ideal option for the Chemical and fertilizer industries. However, you need to check the instrumentation cable specification and ensure that it suits your specific application.

Nyloram (Alternate of Lead Sheathed cable)

- The use of low voltage cables in petrochemical field and refineries, is playing, in recent years, a large share of the market of cables. The use of electrical cables, in a typical petrochemical plant, can reach lengths of up to 4000 km, and these cables must ensure a high efficiency and a resistance to breakage and chemical agents. If these features are not guaranteed, the safety of entire system could be put at risk.
- The main international regulatory bodies have written standards, refer to these types of cables, eliminating the chemical and the mechanical problem introducing the lead covering. Unfortunately this is not enough. What we are experiencing now is a time when the markets are trying to economize and to make an impact as much as possible "clean" on environment, condemning all hazardous substances to a short life.
- Lead is, as we all have learned over years, very strong material, but also very polluting when directly buried, and no longer disposable because it needs to be recycled.
- In this way a number of oil Companies and governments are already demanding lead-free cables for both new projects and upgrades.
- Usually, a lead inner sheath is used as a protection against hydrocarbon (gasoline, diesel fuel and motor oil) and as a moisture barrier.
- The drawback of the lead sheath is mainly its heavy weight and potential health danger.
- Nowadays an alternative exists to get a lighter, healthier cable without losing protection capability.

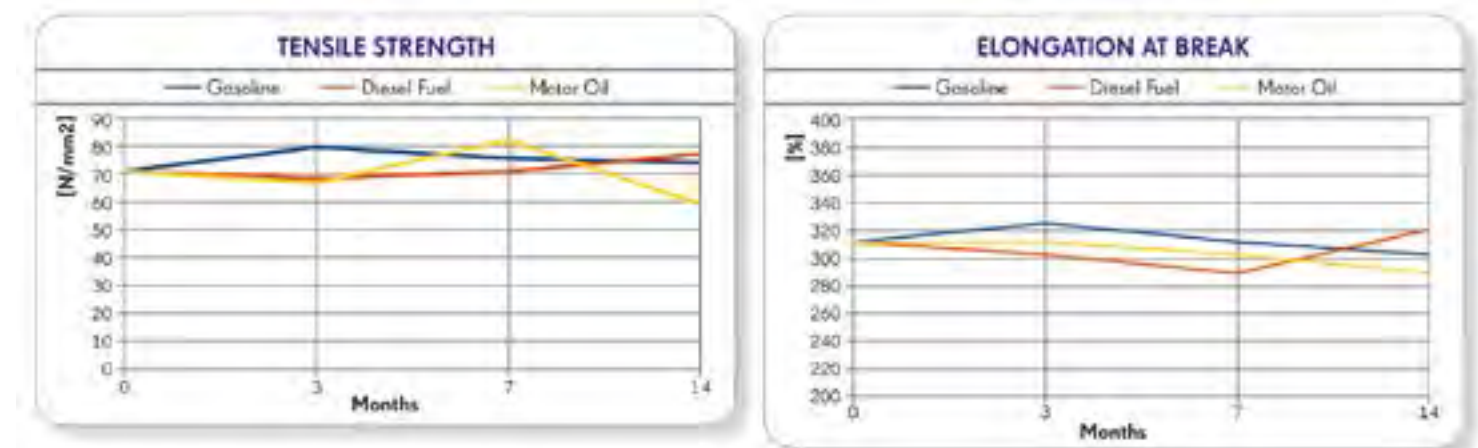
That is possible using a polyamide inner sheath. Polyamide has a good chemical resistance against hydrocarbon (comparable to lead), greater mechanical characteristics (specially against lateral compression (crush)) and less weight.

TESTS:

RAMCRO has conducted tests to verify mechanical behaviour of polyamide after some days of immersion in hydrocarbon. Some samples were immersed into the following fluid

- Gasoline
- Diesel Fuel
- Motor Oil

At interval of 3, 7, 14 months part of the samples were removed from the fluids, a dumbbell specimen was cut from the polyamide sheath and tested for tensile strength and elongation. The results are shown in the following diagrams:



Conclusions:

As shown, polyamide show good behaviour against hydrocarbons often present in petrochemical plant. As additional protection against water, a moisture barrier is usually used made by an aluminium tape bonded to the inner sheath and with the region of overlap bonded as well.



Cable indications for RAMCROIL VAP-GAS BARRIER Fully Filled in according to IEC 60079-14

- This standard contains specific requirements for the design, selection, installation and initial verification of electrical installations in, or associated with, places where explosive atmospheres.
- When the equipment must also be suitable for other critical environmental conditions, for example the possibility of entry of water and possibility of corrosion, can be necessary requirements additional protection.
- The requirements set by the standard apply only in the case of use of the equipment in standard atmospheric conditions, as defined by the IEC EN 60079-0; in the case of different weather conditions it may take additional precautions.
- This standard replaces the IEC 60079-14: 2010-02 which remains applicable until 02/01/2017 and constitutes a technical revision.

The indications about the cable must be as the follow:

1. The cable entry system

Shall comply with the IEC 60079-1 indications

Cable entry device in compliance with IEC 79-1 "Construction and verification test of flameproof enclosures of electrical apparatus" and particular type of cable intended for use with that device. On condition the cable gland is not certified as part of the equipment but tested and certified as a separate component and the used cable is substantially compact and circular the selection chart above taken from section 10 of EN/ IEC60079- 1 can be used.

2. Cable construction

Should be Round

In order to comply with IEC installation standards, cable glands using elastomeric sealing rings as a means of maintaining the Flameproof protection method can only be used if the cable selected is:

"Substantially compact and circular with an extruded bedding, and if any fillers are used they are Non-Hygroscopic" This is clearly not always the case with cables used in hazardous areas.

But the cable must play a part in the safety of the installation, even in the case of indirect cable entry, when gas migration must be avoided.

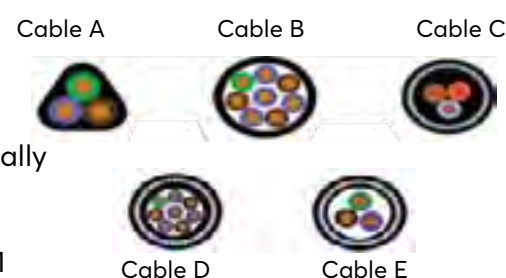


e.g., where cables run across two zones, or indeed from a hazardous area into a safe area.

3. Sample iec cable configurations

Which type is suitable for use with Flameproof Ex 'd' equipment when a cable gland with an elastomeric sealing ring would be considered?

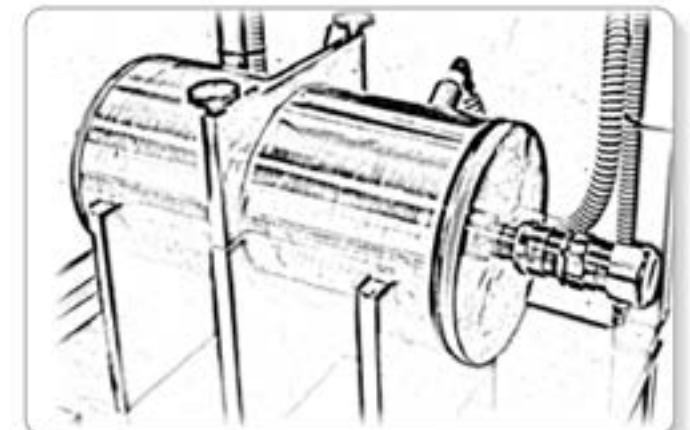
Thermoset, thermosetting or elastomeric cable which is substantially compact and circular, has extruded bedding and fillers, if any, are non-hygroscopic, may utilize flameproof cable entry devices, incorporating a sealing ring selected in accordance with figure 1



Cable indications for RAMCROIL VAP-GAS BARRIER Fully Filled in according to IEC 60079-14

- Cable A is not suitable to apply a Flameproof sealing ring as this cable is the incorrect shape, and unless the cable is round the sealing ring will not be able to make an effective seal on the cable.
- Cables B, D & E are not suitable to apply a Flameproof sealing ring, as the white areas represent a gap or void in the cable whereby there is either no inner cable sheath, or extruded bedding, or suitable fillers are absent. In this case no protection to the interstices of the cable can be offered by a sealing ring.
- Cable C is the only one of the five sample cables illustrated which could be selected as correctly meeting the IEC 60079-14 criteria, as it has an extruded inner cable bedding and there is no gas migration path between the conductors.
- Equally, if the cable is not adequately filled, and allows the passage of air or gas to flow along the cable length then there would be no protection to the inner part of the cable when an elastomeric sealing ring is used.
- In this case a compound barrier type cable gland is the only safe solution and this is needed to maintain the integrity of the equipment as explained above, and prevent gas migration from equipment to equipment, or hazardous areas to safe areas.
- Now a new addition to the Annex E inside the IEC/EN 60079-14, provides a test method that can confirm the appropriateness of the combination cable with strain relief with sealing ring. This appendix describes the verification process cables for tightness to prevent "leakage" of gases between the cores and the eventual transfer of the flame blast through cable.
- The test is carried out on a sample of cable length 0.5 m that attaches to a completely closed and sealed housing volume 5 l (± 2 liters), under conditions of stable ambient temperature. It is believed that the particular pattern satisfied if the initial pressure of 0.3 kPa within housing is reduced by less than 0.15 kPa within 5 s. The housing must be sealed effectively to reduce pressure losses through the casing bands.
- Ex-Agency provided a laboratory for the described test method and has already conducted several tests for the end Users.

Laboratory testing Ex 'd' entries with sealing ring and cable Ex- Area according to Appendix E of the fifth edition of IEC 60079-14.



ramcro
special cables



UL INSTRUMENTATION



UL 13 - PLTC Cable

PVC 105°C - Overall Screened



RAMCRO - UL 13 PLTC - PVC HT 105°



These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685.

CONSTRUCTION

- Formation:**
Plain annealed copper wire, Stranded
- Insulation:**
Hi Temperature Polyvinylchloride - PVC HT 105°C
- Wrapping:**
at least 1 layer of plastic tape 0,023 mm
- Collective Screen:**
0,026 mm Aluminium / PETP tape over copper drain wire
- Outer Sheath:**
Polyvinyl chloride - PVC
- Colour Outer Sheath:**
Black

STANDARD REFERENCES

- UL 13 PLTC Type
- ASTM B3 / B33
- NEC code, Sec. 725 PLTC,
- NEC code, Sec. 727 ITC,
- UL 1685
- ASTM D 1239
- NF C 32-020
- IRAM IAP

CHARACTERISTICS

- Min. Bending Radius
8 x cable diameter
- Hazardous Area Classification
NEC Class I Div. II
IEC Zone 1 - Group 2



TEMPERATURE RANGE

- During Installation:**
-5° C up to +50° C
- Fixed Installation:**
-30° C up to +80° C
- Insulation Operation:**
-30° C up to +150° C



ELECTRICAL DATA

- Insulation Resistance @ 20°C:** > 25 MOhm*Km
- Test Voltage Core-Core:** 2000 V
- Test Voltage Core-Screen:** 2000 V
- Mutual Capacitance between conductors:** < 250 nF/km
- Inductance:** < 1 mH/km
- Operating Voltage:** 300 V

UL 13 - PLTC Cable

PVC 105°C - Overall Screened



These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685.

RAMCRO CODE	FORMATION (mm²)	OVERALL DIAMETER (mm)	APPROX. CABLE WEIGHT (kg/km)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
MAS0106HEACN-UL13	1x2x20AWG	5,7	44	34,6
MAS0206HEACN-UL13	2x2x20AWG	7,6	71	34,6
MAS0406HEACN-UL13	4x2x20AWG	8,7	110	34,6
MAS0606HEACN-UL13	6x2x20AWG	14,1	273	34,6
MAS0806HEACN-UL13	8x2x20AWG	15,0	321	34,6
MAS1006HEACN-UL13	10x2x20AWG	16,7	380	34,6
MAS1206HEACN-UL13	12x2x20AWG	17,2	419	34,6
MAS1606HEACN-UL13	16x2x20AWG	18,6	506	34,6
MAS2406HEACN-UL13	24x2x20AWG	22,1	690	34,6
MAS0105HEACN-UL13	1x2x18AWG	6,2	55	21,8
MAS0205HEACN-UL13	2x2x18AWG	8,3	90	21,8
MAS0405HEACN-UL13	4x2x18AWG	9,6	143	21,8
MAS0605HEACN-UL13	6x2x18AWG	15,2	333	21,8
MAS0805HEACN-UL13	8x2x18AWG	16,3	397	21,8
MAS1005HEACN-UL13	10x2x18AWG	18,2	473	21,8
MAS1205HEACN-UL13	12x2x18AWG	18,7	528	21,8
MAS1605HEACN-UL13	16x2x18AWG	20,3	646	21,8
MAS2405HEACN-UL13	24x2x18AWG	24,3	895	21,8
MAS0105HEACN-UL13	1x2x16AWG	6,8	69	13,7
MAS0205HEACN-UL13	2x2x16AWG	9,2	116	13,7
MAS0405HEACN-UL13	4x2x16AWG	14,5	319	13,7
MAS0605HEACN-UL13	6x2x16AWG	16,6	419	13,7
MAS0805HEACN-UL13	8x2x16AWG	17,9	507	13,7
MAS1005HEACN-UL13	10x2x16AWG	20,1	610	13,7
MAS1205HEACN-UL13	12x2x16AWG	20,6	687	13,7
MAS1605HEACN-UL13	16x2x16AWG	22,5	853	13,7
MAS2405HEACN-UL13	24x2x16AWG	27,6	1233	13,7
MAS0101HEACN-UL13	1x2x14AWG	8,0	95	8,6
MAS0201HEACN-UL13	2x2x14AWG	14,9	297	8,6
MAS0401HEACN-UL13	4x2x14AWG	16,7	434	8,6
MAS0601HEACN-UL13	6x2x14AWG	19,3	583	8,6
MAS0801HEACN-UL13	8x2x14AWG	20,9	717	8,6
MAS1001HEACN-UL13	10x2x14AWG	23,7	868	8,6
MAS1201HEACN-UL13	12x2x14AWG	24,4	988	8,6
MAS1601HEACN-UL13	16x2x14AWG	27,3	1279	8,6
MAS2401HEACN-UL13	24x2x14AWG	33,0	1810	8,6
MAS0152HEACN-UL13	1x2x12AWG	8,9	128	5,4
MAS0252HEACN-UL13	2x2x12AWG	16,3	374	5,4
MAS0452HEACN-UL13	4x2x12AWG	18,5	569	5,4
MAS0652HEACN-UL13	6x2x12AWG	21,5	779	5,4
MAS0852HEACN-UL13	8x2x12AWG	23,4	971	5,4
MAS1052HEACN-UL13	10x2x12AWG	27,2	1220	5,4
MAS1252HEACN-UL13	12x2x12AWG	28,0	1396	5,4
MAS1652HEACN-UL13	16x2x12AWG	30,8	1768	5,4
MAS2452HEACN-UL13	24x2x12AWG	38,0	2580	5,4

CABLE PRINTING

RAMCRO S.p.A. – (UL) Listed E345186 Type
PLTC - 1 pr 20 - Shielded - 90°C <Batch>
<MeterMarking>

IDENTIFICATION OF CORES

Pair: ○ ●



Note: Information subject to confirmation



Note: Information subject to confirmation

UL 13 - PLTC Cable
PVC 105°C - Individual and Collective Screened



RAMCRO - UL 13 PLTC - PVC HT 105°

These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685.

CONSTRUCTION

- Formation: Plain annealed copper wire, Stranded
- Insulation: Hi Temperature Polyvinylchloride - PVC HT 105°C
- Individual Screen: 0,026 mm Aluminium / PETP tape over copper drain wire
- Wrapping: at least 1 layer of plastic tape 0,023 mm
- Collective Screen: 0,026 mm Aluminium / PETP tape over copper drain wire
- Outer Sheath: Polyvinyl chloride - PVC
- Colour Outer Sheath: Black

STANDARD REFERENCES

- UL 13 PLTC Type
- ASTM B3 / B33
- NEC code, Sec. 725 PLTC,
- NEC code, Sec. 727 ITC,
- UL 1685
- ASTM D 1239
- NF C 32-020
- IRAM IAP

CHARACTERISTICS

- Min. Bending Radius 8 x cable diameter
- Hazardous Area Classification NEC Class I Div. II IEC Zone 1 - Group 2



TEMPERATURE RANGE

- During Installation: -5° C up to +50° C
- Fixed Installation: -30° C up to +80° C
- Insulation Operation: -30° C up to +150° C



ELECTRICAL DATA

- Insulation Resistance @ 20°C: > 25 MOhm*Km
- Test Voltage Core-Core: 2000 V
- Test Voltage Core-Screen: 2000 V
- Mutual Capacitance between conductors: < 250 nF/km
- Inductance: < 1 mH/km
- Operating Voltage: 300 V



Note: Information subject to confirmation

UL 13 - PLTC Cable
PVC 105°C - Individual Screened



These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685.

RAMCRO CODE	FORMATION (mm²)	OVERALL DIAMETER (mm)	APPROX. CABLE WEIGHT (kg/km)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
MAC0206HEACN-UL13	2x2x20AWG	7,8	80	34,6
MAC0406HEACN-UL13	4x2x20AWG	9,0	126	34,6
MAC0606HEACN-UL13	6x2x20AWG	14,4	301	34,6
MAC0806HEACN-UL13	8x2x20AWG	15,5	356	34,6
MAC1006HEACN-UL13	10x2x20AWG	17,2	424	34,6
MAC1206HEACN-UL13	12x2x20AWG	17,7	471	34,6
MAC1606HEACN-UL13	16x2x20AWG	19,2	574	34,6
MAC2006HEACN-UL13	20x2x20AWG	21,1	683	34,6
MAC2406HEACN-UL13	24x2x20AWG	22,8	790	34,6
MAC0205HEACN-UL13	2x2x18AWG	8,6	100	21,8
MAC0405HEACN-UL13	4x2x18AWG	13,7	280	21,8
MAC0605HEACN-UL13	6x2x18AWG	15,5	364	21,8
MAC0805HEACN-UL13	8x2x18AWG	16,7	438	21,8
MAC1005HEACN-UL13	10x2x18AWG	18,7	524	21,8
MAC1205HEACN-UL13	12x2x18AWG	19,2	587	21,8
MAC1605HEACN-UL13	16x2x18AWG	20,9	725	21,8
MAC2005HEACN-UL13	20x2x18AWG	23,1	868	21,8
MAC2405HEACN-UL13	24x2x18AWG	25,6	1044	21,8
MAC0205HEACN-UL13	2x2x16AWG	9,5	126	13,7
MAC0405HEACN-UL13	4x2x16AWG	14,8	341	13,7
MAC0605HEACN-UL13	6x2x16AWG	16,9	450	13,7
MAC0805HEACN-UL13	8x2x16AWG	18,3	548	13,7
MAC1005HEACN-UL13	10x2x16AWG	20,6	661	13,7
MAC1205HEACN-UL13	12x2x16AWG	21,1	747	13,7
MAC1605HEACN-UL13	16x2x16AWG	23,1	931	13,7
MAC2005HEACN-UL13	20x2x16AWG	26,1	1157	13,7
MAC2405HEACN-UL13	24x2x16AWG	28,4	1350	13,7
MAC0201HEACN-UL13	2x2x14AWG	15,1	310	8,6
MAC0401HEACN-UL13	4x2x14AWG	17	458	8,6
MAC0601HEACN-UL13	6x2x14AWG	19,6	618	8,6
MAC0801HEACN-UL13	8x2x14AWG	21,3	763	8,6
MAC1001HEACN-UL13	10x2x14AWG	24,2	926	8,6
MAC1201HEACN-UL13	12x2x14AWG	24,9	1055	8,6
MAC1601HEACN-UL13	16x2x14AWG	27,9	1368	8,6
MAC2001HEACN-UL13	20x2x14AWG	30,9	1657	8,6
MAC2401HEACN-UL13	24x2x14AWG	33,8	1942	8,6
MAC0252HEACN-UL13	2x2x12AWG	16,6	388	5,4
MAC0452HEACN-UL13	4x2x12AWG	18,8	596	5,4
MAC0652HEACN-UL13	6x2x12AWG	21,9	818	5,4
MAC0852HEACN-UL13	8x2x12AWG	23,8	1022	5,4
MAC1052HEACN-UL13	10x2x12AWG	27,7	1285	5,4
MAC1252HEACN-UL13	12x2x12AWG	28,5	1473	5,4
MAC1652HEACN-UL13	16x2x12AWG	31,4	1868	5,4
MAC2052HEACN-UL13	20x2x12AWG	35,4	2321	5,4
MAC2452HEACN-UL13	24x2x12AWG	38,7	2729	5,4

IDENTIFICATION OF CORES

Pair: ○ ●

RAMCRO S.p.A. – (UL) Listed E345186 Type PLTC - 1 pr 20 - Shielded - 90°C <Batch> <MeterMarking>



Note: Information subject to confirmation

UL 13 - PLTC Cable

PVC 105°C - Collective Screened with Amour



RAMCRO - UL 13 PLTC - PVC HT 105°

These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

CONSTRUCTION

- Formation:**
Plain annealed copper wire, Stranded
- Insulation:**
Hi Temperature Polyvinylchloride - PVC HT 105°C
- Wrapping:**
at least 1 layer of plastic tape 0,023 mm
- Collective Screen:**
0,026 mm Aluminium / PETP tape over copper drain wire
- Inner Sheath:**
Polyvinyl chloride - PVC
- Armour:**
Galvanized Steel Wire Armour
- Outer Sheath:**
Polyvinyl chloride - PVC
- Colour Outer Sheath:**
Black

TEMPERATURE RANGE

- During Installation:**
-5° C up to +50° C
- Fixed Installation:**
-30° C up to +80°C
- Insulation Operation:**
-30° C up to +150°C



ELECTRICAL DATA

- Insulation Resistance @ 20°C:** > 25 MOhm*Km
- Test Voltage Core-Core:** 2000 V
- Test Voltage Core-Screen:** 2000 V
- Mutual Capacitance between conductors:** < 250 nF/km
- Inductance:** < 1 mH/km
- Operating Voltage:** 300 V

STANDARD REFERENCES

- UL 13 PLTC Type
- ASTM B3 / B33
- NEC code, Sec. 725 PLTC,
- NEC code, Sec. 727 ITC,
- UL 1685
- ASTM D 1239
- NF C 32-020
- IRAM IAP

CHARACTERISTICS

- Min. Bending Radius
14 x Cable Diameter
- Hazardous Area Classification
NEC Class I Div. II
IEC Zone 1 - Group 2



CABLE PRINTING

RAMCRO S.p.A. – (UL) Listed E345186 Type
PLTC - 1 pr 20 - Shielded - 90°C <Batch>
<MeterMarking>

IDENTIFICATION OF CORES

Pair: ○ ●

UL 13 - PLTC Cable

PVC 105°C - Collective Screened with Amour



These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

RAMCRO CODE	FORMATION (mm²)	OVERALL DIAMETER (mm)	APPROX. CABLE WEIGHT (kg/km)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
MAS0106AEACN-UL13	1x2x20AWG	9,3	174	34,6
MAS0206AEACN-UL13	2x2x20AWG	15,2	380	34,6
MAS0406AEACN-UL13	4x2x20AWG	16,3	451	34,6
MAS0606AEACN-UL13	6x2x20AWG	18,4	567	34,6
MAS0806AEACN-UL13	8x2x20AWG	19,4	636	34,6
MAS1006AEACN-UL13	10x2x20AWG	21,0	730	34,6
MAS1206AEACN-UL13	12x2x20AWG	21,5	778	34,6
MAS1606AEACN-UL13	16x2x20AWG	24,1	1041	34,6
MAS2406AEACN-UL13	24x2x20AWG	28,8	1493	34,6
MAS0105AEACN-UL13	1x2x18AWG	13,5	310	21,8
MAS0205AEACN-UL13	2x2x18AWG	15,9	420	21,8
MAS0405AEACN-UL13	4x2x18AWG	17,2	511	21,8
MAS0605AEACN-UL13	6x2x18AWG	19,5	650	21,8
MAS0805AEACN-UL13	8x2x18AWG	20,6	738	21,8
MAS1005AEACN-UL13	10x2x18AWG	23,2	960	21,8
MAS1205AEACN-UL13	12x2x18AWG	24,2	1065	21,8
MAS1605AEACN-UL13	16x2x18AWG	26,4	1265	21,8
MAS2405AEACN-UL13	24x2x18AWG	31,0	1774	21,8
MAS0105AEACN-UL13	1x2x16AWG	14,1	341	13,7
MAS0205AEACN-UL13	2x2x16AWG	16,9	474	13,7
MAS0405AEACN-UL13	4x2x16AWG	18,8	623	13,7
MAS0605AEACN-UL13	6x2x16AWG	20,9	766	13,7
MAS0805AEACN-UL13	8x2x16AWG	22,9	984	13,7
MAS1005AEACN-UL13	10x2x16AWG	26,1	1220	13,7
MAS1205AEACN-UL13	12x2x16AWG	26,7	1313	13,7
MAS1605AEACN-UL13	16x2x16AWG	29,3	1670	13,7
MAS2405AEACN-UL13	24x2x16AWG	34,8	2273	13,7
MAS0101AEACN-UL13	1x2x14AWG	15,6	415	8,6
MAS0201AEACN-UL13	2x2x14AWG	19,2	608	8,6
MAS0401AEACN-UL13	4x2x14AWG	21,0	783	8,6
MAS0601AEACN-UL13	6x2x14AWG	24,8	1135	8,6
MAS0801AEACN-UL13	8x2x14AWG	26,9	1351	8,6
MAS1001AEACN-UL13	10x2x14AWG	30,4	1726	8,6
MAS1201AEACN-UL13	12x2x14AWG	31,1	1870	8,6
MAS1601AEACN-UL13	16x2x14AWG	34,0	2262	8,6
MAS2401AEACN-UL13	24x2x14AWG	41,1	3272	8,6
MAS0152AEACN-UL13	1x2x12AWG	16,5	476	5,4
MAS0252AEACN-UL13	2x2x12AWG	20,7	716	5,4
MAS0452AEACN-UL13	4x2x12AWG	23,5	1063	5,4
MAS0652AEACN-UL13	6x2x12AWG	27,5	1431	5,4
MAS0852AEACN-UL13	8x2x12AWG	30,1	1819	5,4
MAS1052AEACN-UL13	10x2x12AWG	33,9	2199	5,4
MAS1252AEACN-UL13	12x2x12AWG	36,0	2646	5,4
MAS1652AEACN-UL13	16x2x12AWG	38,8	3135	5,4
MAS2452AEACN-UL13	24x2x12AWG	46,5	4312	5,4



Note: Information subject to confirmation



Note: Information subject to confirmation

UL 13 - PLTC Cable

PVC 105°C - Individual and Collective Screened with Armour



RAMCRO - UL 13 PLTC - PVC HT 105°

These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

CONSTRUCTION

- Formation:**
Plain annealed copper wire, Stranded
- Insulation:**
Hi Temperature Polyvinylchloride - PVC HT 105°C
- Individual Screen:**
0,026 mm Aluminium / PETP tape over copper drain wire
- Wrapping:**
at least 1 layer of plastic tape 0,023 mm
- Collective Screen:**
0,026 mm Aluminium / PETP tape over copper drain wire
- Inner Sheath:**
Polyvinyl chloride - PVC
- Armour:**
Galvanized Steel Wire Armour
- Outer Sheath:**
Polyvinyl chloride - PVC
- Colour Outer Sheath:**
Black

TEMPERATURE RANGE

- During Installation:**
-5° C up to +50° C
- Fixed Installation:**
-30° C up to +80°C
- Insulation Operation:**
-30° C up to +150°C



ELECTRICAL DATA

- Insulation Resistance @ 20°C:** > 25 MOhm*Km
- Test Voltage Core-Core:** 2000 V
- Test Voltage Core-Screen:** 2000 V
- Mutual Capacitance between conductors:** < 250 nF/km
- Inductance:** < 1 mH/km
- Operating Voltage:** 300 V

STANDARD REFERENCES

- UL 13 PLTC Type
- ASTM B3 / B33
- NEC code, Sec. 725 PLTC,
- NEC code, Sec. 727 ITC,
- UL 1685
- ASTM D 1239
- NF C 32-020
- IRAM IAP

CHARACTERISTICS

- Min. Bending Radius
14 x Cable Diameter
- Hazardous Area Classification
NEC Class I Div. II
IEC Zone 1 - Group 2



CABLE PRINTING

RAMCRO S.p.A. - (UL) Listed E345186 Type
PLTC - 1 pr 20 - Shielded - 90°C <Batch>
<MeterMarking>

IDENTIFICATION OF CORES

Pair: ○ ●

UL 13 - PLTC Cable

PVC 105°C - Individual and Collective Screened with Armour



These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

RAMCRO CODE	FORMATION (mm²)	OVERALL DIAMETER (mm)	APPROX. CABLE WEIGHT (kg/km)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
MAC0206AEACN-UL13	2x2x20AWG	15,5	396	34.6
MAC0406AEACN-UL13	4x2x20AWG	16,6	477	34.6
MAC0606AEACN-UL13	6x2x20AWG	18,8	604	34.6
MAC0806AEACN-UL13	8x2x20AWG	19,8	681	34.6
MAC1006AEACN-UL13	10x2x20AWG	21,6	786	34.6
MAC1206AEACN-UL13	12x2x20AWG	22,7	944	34.6
MAC1606AEACN-UL13	16x2x20AWG	24,7	1126	34.6
MAC2006AEACN-UL13	20x2x20AWG	27,1	1324	34.6
MAC2406AEACN-UL13	24x2x20AWG	29,6	1620	34.6
MAC0205AEACN-UL13	2x2x18AWG	16,2	438	21.8
MAC0405AEACN-UL13	4x2x18AWG	18,0	568	21.8
MAC0605AEACN-UL13	6x2x18AWG	19,9	690	21.8
MAC0805AEACN-UL13	8x2x18AWG	21,0	789	21.8
MAC1005AEACN-UL13	10x2x18AWG	24,2	1063	21.8
MAC1205AEACN-UL13	12x2x18AWG	24,8	1140	21.8
MAC1605AEACN-UL13	16x2x18AWG	27,0	1362	21.8
MAC2005AEACN-UL13	20x2x18AWG	29,8	1706	21.8
MAC2405AEACN-UL13	24x2x18AWG	32,3	1970	21.8
MAC0205AEACN-UL13	2x2x16AWG	17,1	492	13.7
MAC0405AEACN-UL13	4x2x16AWG	19,1	651	13.7
MAC0605AEACN-UL13	6x2x16AWG	21,3	806	13.7
MAC0805AEACN-UL13	8x2x16AWG	23,3	1037	13.7
MAC1005AEACN-UL13	10x2x16AWG	26,6	1287	13.7
MAC1205AEACN-UL13	12x2x16AWG	27,2	1390	13.7
MAC1605AEACN-UL13	16x2x16AWG	29,9	1770	13.7
MAC2005AEACN-UL13	20x2x16AWG	32,8	2099	13.7
MAC2405AEACN-UL13	24x2x16AWG	36,4	2616	13.7
MAC0201AEACN-UL13	2x2x14AWG	19,4	627	8.6
MAC0401AEACN-UL13	4x2x14AWG	21,3	814	8.6
MAC0601AEACN-UL13	6x2x14AWG	25,7	1217	8.6
MAC0801AEACN-UL13	8x2x14AWG	27,4	1411	8.6
MAC1001AEACN-UL13	10x2x14AWG	30,9	1802	8.6
MAC1201AEACN-UL13	12x2x14AWG	31,7	1957	8.6
MAC1601AEACN-UL13	16x2x14AWG	35,1	2419	8.6
MAC2001AEACN-UL13	20x2x14AWG	39,0	3031	8.6
MAC2401AEACN-UL13	24x2x14AWG	41,8	3437	8.6
MAC0252AEACN-UL13	2x2x12AWG	20,9	737	5.4
MAC0452AEACN-UL13	4x2x12AWG	24,3	1136	5.4
MAC0652AEACN-UL13	6x2x12AWG	27,9	1482	5.4
MAC0852AEACN-UL13	8x2x12AWG	30,6	1886	5.4
MAC1052AEACN-UL13	10x2x12AWG	34,9	2328	5.4
MAC1252AEACN-UL13	12x2x12AWG	36,6	2746	5.4
MAC1652AEACN-UL13	16x2x12AWG	39,4	3262	5.4
MAC2052AEACN-UL13	20x2x12AWG	43,5	3885	5.4
MAC2452AEACN-UL13	24x2x12AWG	47,3	4496	5.4



Note: Information subject to confirmation



Note: Information subject to confirmation

RAMCRO - UL 13 PLTC - XLPE

These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685.

CONSTRUCTION

Formation:
Plain annealed copper wire, Stranded

Insulation:
Cross Linked Polyetilene - XLPE

Wrapping:
at least 1 layer of plastic tape 0,023 mm

Collective Screen:
0,026 mm Aluminium / PETP tape over copper drain wire

Outer Sheath:
Thermoplastic Low Smoke, Halogen Free - LSZH

Colour Outer Sheath:
Black

STANDARD REFERENCES

- UL 13 PLTC Type
- ASTM B3 / B33
- NEC code, Sec. 725 PLTC,
- NEC code, Sec. 727 ITC,
- UL 1685
- ASTM D 1239
- NF C 32-020
- IRAM IAP

CHARACTERISTICS

Min. Bending Radius
8 x Cable Diameter

Hazardous Area Classification
NEC Class I Div. II
IEC Zone 1 - Group 2



TEMPERATURE RANGE

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

Fixed Installation:
-40° C up to +75° C

Insulation Operation:
-40° C up to +90° C



ELECTRICAL DATA

Insulation Resistance @ 20°C: > 1000 MOhm*Km

Test Voltage Core-Core: 2000 V

Test Voltage Core-Screen: 2000 V

Mutual Capacitance between conductors: < 250 nF/km

Inductance: < 1 mH/km

Operating Voltage: 300 V

These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685.

RAMCRO CODE	FORMATION (mm²)	OVERALL DIAMETER (mm)	APPROX. CABLE WEIGHT (kg/km)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
MAS0106HEEXN-UL13	1x2x20AWG	5,7	41	34,6
MAS0206HEEXN-UL13	2x2x20AWG	7,9	67	34,6
MAS0406HEEXN-UL13	4x2x20AWG	9,1	102	34,6
MAS0606HEEXN-UL13	6x2x20AWG	14,6	258	34,6
MAS0806HEEXN-UL13	8x2x20AWG	15,6	302	34,6
MAS1006HEEXN-UL13	10x2x20AWG	17,4	357	34,6
MAS1206HEEXN-UL13	12x2x20AWG	17,9	392	34,6
MAS1606HEEXN-UL13	16x2x20AWG	19,4	472	34,6
MAS2406HEEXN-UL13	24x2x20AWG	23,1	639	34,6
MAS0105HEEXN-UL13	1x2x18AWG	6,2	51	21,8
MAS0205HEEXN-UL13	2x2x18AWG	8,7	85	21,8
MAS0405HEEXN-UL13	4x2x18AWG	13,9	246	21,8
MAS0605HEEXN-UL13	6x2x18AWG	15,8	316	21,8
MAS0805HEEXN-UL13	8x2x18AWG	17,0	375	21,8
MAS1005HEEXN-UL13	10x2x18AWG	19,0	447	21,8
MAS1205HEEXN-UL13	12x2x18AWG	19,5	497	21,8
MAS1605HEEXN-UL13	16x2x18AWG	21,3	606	21,8
MAS2405HEEXN-UL13	24x2x18AWG	26,0	868	21,8
MAS0105HEEXN-UL13	1x2x16AWG	6,8	64	13,7
MAS0205HEEXN-UL13	2x2x16AWG	13,5	220	13,7
MAS0405HEEXN-UL13	4x2x16AWG	15,1	305	13,7
MAS0605HEEXN-UL13	6x2x16AWG	17,2	400	13,7
MAS0805HEEXN-UL13	8x2x16AWG	18,6	482	13,7
MAS1005HEEXN-UL13	10x2x16AWG	21,0	580	13,7
MAS1205HEEXN-UL13	12x2x16AWG	21,6	651	13,7
MAS1605HEEXN-UL13	16x2x16AWG	23,6	805	13,7
MAS2405HEEXN-UL13	24x2x16AWG	29,0	1001	13,7
MAS0101HEEXN-UL13	1x2x14AWG	7,6	85	8,6
MAS0201HEEXN-UL13	2x2x14AWG	14,8	272	8,6
MAS0401HEEXN-UL13	4x2x14AWG	16,6	394	8,6
MAS0601HEEXN-UL13	6x2x14AWG	19,1	526	8,6
MAS0801HEEXN-UL13	8x2x14AWG	20,8	645	8,6
MAS1001HEEXN-UL13	10x2x14AWG	23,5	782	8,6
MAS1201HEEXN-UL13	12x2x14AWG	24,2	887	8,6
MAS1601HEEXN-UL13	16x2x14AWG	27,1	1147	8,6
MAS2401HEEXN-UL13	24x2x14AWG	32,8	1619	8,6
MAS0152HEEXN-UL13	1x2x12AWG	8,5	116	5,4
MAS0252HEEXN-UL13	2x2x12AWG	16,4	346	5,4
MAS0452HEEXN-UL13	4x2x12AWG	18,5	524	5,4
MAS0652HEEXN-UL13	6x2x12AWG	21,5	715	5,4
MAS0852HEEXN-UL13	8x2x12AWG	23,4	890	5,4
MAS1052HEEXN-UL13	10x2x12AWG	27,2	1119	5,4
MAS1252HEEXN-UL13	12x2x12AWG	28,0	1278	5,4
MAS1652HEEXN-UL13	16x2x12AWG	30,8	1616	5,4
MAS2452HEEXN-UL13	24x2x12AWG	38,0	2355	5,4

UL 13 - PLTC Cable

XLPE - Individual and Collective Screened



RAMCRO - UL 13 PLTC - XLPE

These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685.

CONSTRUCTION

- Formation:**
Plain annealed copper wire, Stranded
- Insulation:**
Cross Linked Polyetilene - XLPE
- Individual Screen:**
0,026 mm Aluminium / PETP tape over copper drain wire
- Wrapping:**
at least 1 layer of plastic tape 0,023 mm
- Collective Screen:**
0,026 mm Aluminium / PETP tape over copper drain wire
- Outer Sheath:**
Thermoplastic Low Smoke, Halogen Free - LSZH
- Colour Outer Sheath:**
Black

TEMPERATURE RANGE

- During Installation:**
-5° C up to +50° C
- Fixed Installation:**
-40° C up to +75°C
- Insulation Operation:**
-40° C up to +90°C



ELECTRICAL DATA

- Insulation Resistance @ 20°C:** > 1000 MOhm*Km
- Test Voltage Core-Core:** 2000 V
- Test Voltage Core-Screen:** 2000 V
- Mutual Capacitance between conductors:** < 250 nF/km
- Inductance:** < 1 mH/km
- Operating Voltage:** 300 V

STANDARD REFERENCES

- UL 13 PLTC Type
- ASTM B3 / B33
- NEC code, Sec. 725 PLTC,
- NEC code, Sec. 727 ITC,
- UL 1685
- ASTM D 1239
- NF C 32-020
- IRAM IAP

CHARACTERISTICS

- Min. Bending Radius
8 x Cable Diameter
- Hazardous Area Classification
NEC Class I Div. II
IEC Zone 1 - Group 2



CABLE PRINTING

RAMCRO S.p.A. – (UL) Listed E345186 Type
PLTC - 1 pr 20 - Shielded - 75°C <Batch>
<MeterMarking>

IDENTIFICATION OF CORES

Pair: ○ ●

UL 13 - PLTC Cable

XLPE - Individual Screened



These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685.

RAMCRO CODE	FORMATION (mm²)	OVERALL DIAMETER (mm)	APPROX. CABLE WEIGHT (kg/km)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
MAC0206HEEXN-UL13	2x2x20AWG	8,2	76	34.6
MAC0406HEEXN-UL13	4x2x20AWG	9,4	118	34.6
MAC0606HEEXN-UL13	6x2x20AWG	15,0	286	34.6
MAC0806HEEXN-UL13	8x2x20AWG	16,1	338	34.6
MAC1006HEEXN-UL13	10x2x20AWG	18,0	402	34.6
MAC1206HEEXN-UL13	12x2x20AWG	18,4	444	34.6
MAC1606HEEXN-UL13	16x2x20AWG	20,0	539	34.6
MAC2006HEEXN-UL13	20x2x20AWG	22,1	640	34.6
MAC2406HEEXN-UL13	24x2x20AWG	23,9	739	34.6
MAC0205HEEXN-UL13	2x2x18AWG	9,0	95	21.8
MAC0405HEEXN-UL13	4x2x18AWG	14,2	268	21.8
MAC0605HEEXN-UL13	6x2x18AWG	16,1	348	21.8
MAC0805HEEXN-UL13	8x2x18AWG	17,4	416	21.8
MAC1005HEEXN-UL13	10x2x18AWG	19,5	498	21.8
MAC1205HEEXN-UL13	12x2x18AWG	20,1	557	21.8
MAC1605HEEXN-UL13	16x2x18AWG	21,9	684	21.8
MAC2005HEEXN-UL13	20x2x18AWG	24,2	818	21.8
MAC2405HEEXN-UL13	24x2x18AWG	26,8	985	21.8
MAC0205HEEXN-UL13	2x2x16AWG	13,8	232	13.7
MAC0405HEEXN-UL13	4x2x16AWG	15,4	327	13.7
MAC0605HEEXN-UL13	6x2x16AWG	17,6	431	13.7
MAC0805HEEXN-UL13	8x2x16AWG	19,1	523	13.7
MAC1005HEEXN-UL13	10x2x16AWG	21,5	630	13.7
MAC1205HEEXN-UL13	12x2x16AWG	22,1	710	13.7
MAC1605HEEXN-UL13	16x2x16AWG	24,2	883	13.7
MAC2005HEEXN-UL13	20x2x16AWG	27,3	1098	13.7
MAC2405HEEXN-UL13	24x2x16AWG	29,8	1279	13.7
MAC0201HEEXN-UL13	2x2x14AWG	15,0	285	8.6
MAC0401HEEXN-UL13	4x2x14AWG	16,9	418	8.6
MAC0601HEEXN-UL13	6x2x14AWG	19,5	562	8.6
MAC0801HEEXN-UL13	8x2x14AWG	21,2	692	8.6
MAC1001HEEXN-UL13	10x2x14AWG	24	839	8.6
MAC1201HEEXN-UL13	12x2x14AWG	24,8	955	8.6
MAC1601HEEXN-UL13	16x2x14AWG	27,7	1236	8.6
MAC2001HEEXN-UL13	20x2x14AWG	30,7	1495	8.6
MAC2401HEEXN-UL13	24x2x14AWG	33,6	1751	8.6
MAC0252HEEXN-UL13	2x2x12AWG	16,6	361	5.4
MAC0452HEEXN-UL13	4x2x12AWG	18,8	551	5.4
MAC0652HEEXN-UL13	6x2x12AWG	21,9	754	5.4
MAC0852HEEXN-UL13	8x2x12AWG	23,9	941	5.4
MAC1052HEACN-UL13	10x2x12AWG	27,7	1183	5.4
MAC1252HEEXN-UL13	12x2x12AWG	28,6	1355	5.4
MAC1652HEEXN-UL13	16x2x12AWG	31,4	1716	5.4
MAC2052HEEXN-UL13	20x2x12AWG	35,5	2131	5.4
MAC2452HEEXN-UL13	24x2x12AWG	38,8	2504	5.4



Note: Information subject to confirmation



Note: Information subject to confirmation

UL 13 - PLTC Cable

XLPE - Collective Screened with Armour



RAMCRO - UL 13 PLTC - XLPE

These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

CONSTRUCTION

- Formation:**
Plain annealed copper wire, Stranded
- Insulation:**
Cross Linked Polyetilene - XLPE
- Wrapping:**
at least 1 layer of plastic tape 0,023 mm
- Collective Screen:**
0,026 mm Aluminium / PETP tape over copper drain wire
- Inner Sheath:**
Thermoplastic Low Smoke, Halogen Free - LSZH
- Armour:**
Galvanized Steel Wires Armour
- Outer Sheath:**
Thermoplastic Low Smoke, Halogen Free - LSZH
- Colour Outer Sheath:**
Black

TEMPERATURE RANGE

- During Installation:**
-5° C up to +50° C
- Fixed Installation:**
-40° C up to +75° C
- Insulation Operation:**
-40° C up to +90° C



ELECTRICAL DATA

- Insulation Resistance @ 20°C:** > 1000 MOhm*Km
- Test Voltage Core-Core:** 2000 V
- Test Voltage Core-Screen:** 2000 V
- Mutual Capacitance between conductors:** < 250 nF/km
- Inductance:** < 1 mH/km
- Operating Voltage:** 300 V

STANDARD REFERENCES

- UL 13 PLTC Type
- ASTM B3 / B33
- NEC code, Sec. 725 PLTC,
- NEC code, Sec. 727 ITC,
- UL 1685
- ASTM D 1239
- NF C 32-020
- IRAM IAP

CHARACTERISTICS

- Min. Bending Radius
14 x Cable Diameter
- Hazardous Area Classification
NEC Class I Div. II
IEC Zone 1 - Group 2



CABLE PRINTING

RAMCRO S.p.A. – (UL) Listed E345186 Type
PLTC - 1 pr 20 - Shielded - 75°C <Batch>
<MeterMarking>

IDENTIFICATION OF CORES

Pair: ○ ●

UL 13 - PLTC Cable

XLPE - Collective Screened with Armour



These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

RAMCRO CODE	FORMATION (mm²)	OVERALL DIAMETER (mm)	APPROX. CABLE WEIGHT (kg/km)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
MAS0106AEEXN-UL13	1x2x20AWG	9,3	169	34.6
MAS0206AEEXN-UL13	2x2x20AWG	15,5	375	34.6
MAS0406AEEXN-UL13	4x2x20AWG	16,7	443	34.6
MAS0606AEEXN-UL13	6x2x20AWG	18,9	556	34.6
MAS0806AEEXN-UL13	8x2x20AWG	19,9	622	34.6
MAS1006AEEXN-UL13	10x2x20AWG	22,4	813	34.6
MAS1206AEEXN-UL13	12x2x20AWG	22,9	860	34.6
MAS1606AEEXN-UL13	16x2x20AWG	25,5	1050	34.6
MAS2406AEEXN-UL13	24x2x20AWG	29,9	1462	34.6
MAS0105AEEXN-UL13	1x2x18AWG	13,5	297	21.8
MAS0205AEEXN-UL13	2x2x18AWG	16,3	415	21.8
MAS0405AEEXN-UL13	4x2x18AWG	18,2	529	21.8
MAS0605AEEXN-UL13	6x2x18AWG	20,1	638	21.8
MAS0805AEEXN-UL13	8x2x18AWG	21,3	722	21.8
MAS1005AEEXN-UL13	10x2x18AWG	24,5	981	21.8
MAS1205AEEXN-UL13	12x2x18AWG	25,6	1078	21.8
MAS1605AEEXN-UL13	16x2x18AWG	27,3	1237	21.8
MAS2405AEEXN-UL13	24x2x18AWG	32,7	1789	21.8
MAS0105AEEXN-UL13	1x2x16AWG	14,1	327	13.7
MAS0205AEEXN-UL13	2x2x16AWG	17,8	496	13.7
MAS0405AEEXN-UL13	4x2x16AWG	19,4	613	13.7
MAS0605AEEXN-UL13	6x2x16AWG	21,5	752	13.7
MAS0805AEEXN-UL13	8x2x16AWG	24,1	1006	13.7
MAS1005AEEXN-UL13	10x2x16AWG	27,0	1202	13.7
MAS1205AEEXN-UL13	12x2x16AWG	27,6	1290	13.7
MAS1605AEEXN-UL13	16x2x16AWG	30,3	1643	13.7
MAS2405AEEXN-UL13	24x2x16AWG	37,0	2430	13.7
MAS0101AEEXN-UL13	1x2x14AWG	15,2	382	8.6
MAS0201AEEXN-UL13	2x2x14AWG	19,1	574	8.6
MAS0401AEEXN-UL13	4x2x14AWG	20,9	733	8.6
MAS0601AEEXN-UL13	6x2x14AWG	24,7	1064	8.6
MAS0801AEEXN-UL13	8x2x14AWG	26,8	1262	8.6
MAS1001AEEXN-UL13	10x2x14AWG	30,2	1617	8.6
MAS1201AEEXN-UL13	12x2x14AWG	30,9	1747	8.6
MAS1601AEEXN-UL13	16x2x14AWG	33,8	2105	8.6
MAS2401AEEXN-UL13	24x2x14AWG	40,8	3045	8.6
MAS0152AEEXN-UL13	1x2x12AWG	16,1	440	5.4
MAS0252AEEXN-UL13	2x2x12AWG	20,7	681	5.4
MAS0452AEEXN-UL13	4x2x12AWG	23,5	1008	5.4
MAS0652AEEXN-UL13	6x2x12AWG	27,6	1353	5.4
MAS0852AEEXN-UL13	8x2x12AWG	30,2	1723	5.4
MAS1052AEEXN-UL13	10x2x12AWG	33,9	2080	5.4
MAS1252AEEXN-UL13	12x2x12AWG	36,1	2506	5.4
MAS1652AEEXN-UL13	16x2x12AWG	38,8	2960	5.4
MAS2452AEEXN-UL13	24x2x12AWG	46,6	4057	5.4



Note: Information subject to confirmation



Note: Information subject to confirmation

UL 13 - PLTC Cable

XLPE - Individual and Collective Screened with Armour



RAMCRO - UL 13 PLTC - XLPE

These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

CONSTRUCTION

- Formation:**
Plain annealed copper wire, Stranded
- Insulation:**
Cross Linked Polyethylene - XLPE
- Individual Screen:**
0,026 mm Aluminium / PETP tape over copper drain wire
- Wrapping:**
at least 1 layer of plastic tape 0,023 mm
- Collective Screen:**
0,026 mm Aluminium / PETP tape over copper drain wire
- Inner Sheath:**
Thermoplastic Low Smoke, Halogen Free - LSZH
- Armour:**
Galvanized Steel Wires Armour
- Outer Sheath:**
Thermoplastic Low Smoke, Halogen Free - LSZH
- Colour Outer Sheath:**
Black

TEMPERATURE RANGE

- During Installation:**
-5° C up to +50° C
- Fixed Installation:**
-40° C up to +75° C
- Insulation Operation:**
-40° C up to +90° C



ELECTRICAL DATA

- Insulation Resistance @ 20°C:** > 1000 MOhm*Km
- Test Voltage Core-Core:** 2000 V
- Test Voltage Core-Screen:** 2000 V
- Mutual Capacitance between conductors:** < 250 nF/km
- Inductance:** < 1 mH/km
- Operating Voltage:** 300 V

STANDARD REFERENCES

- UL 13 PLTC Type
- ASTM B3 / B33
- NEC code, Sec. 725 PLTC,
- NEC code, Sec. 727 ITC,
- UL 1685
- ASTM D 1239
- NF C 32-020
- IRAM IAP

CHARACTERISTICS

- Min. Bending Radius
14 x Cable Diameter
- Hazardous Area Classification
NEC Class I Div. II
IEC Zone 1 - Group 2



CABLE PRINTING

RAMCRO S.p.A. - (UL) Listed E345186 Type
PLTC - 1 pr 20 - Shielded - 75°C <Batch>
<MeterMarking>

IDENTIFICATION OF CORES

Pair: ○ ●

UL 13 - PLTC Cable

XLPE - Individual and Collective Screened with Armour



These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

RAMCRO CODE	FORMATION (mm²)	OVERALL DIAMETER (mm)	APPROX. CABLE WEIGHT (kg/km)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
MAC0206AEEXN-UL13	2x2x20AWG	15,8	391	34,6
MAC0406AEEXN-UL13	4x2x20AWG	17,1	469	34,6
MAC0606AEEXN-UL13	6x2x20AWG	19,3	593	34,6
MAC0806AEEXN-UL13	8x2x20AWG	20,4	668	34,6
MAC1006AEEXN-UL13	10x2x20AWG	23,0	873	34,6
MAC1206AEEXN-UL13	12x2x20AWG	23,5	928	34,6
MAC1606AEEXN-UL13	16x2x20AWG	26,1	1136	34,6
MAC2006AEEXN-UL13	20x2x20AWG	28,8	1427	34,6
MAC2406AEEXN-UL13	24x2x20AWG	30,7	1590	34,6
MAC0205AEEXN-UL13	2x2x18AWG	16,6	433	21,8
MAC0405AEEXN-UL13	4x2x18AWG	18,5	558	21,8
MAC0605AEEXN-UL13	6x2x18AWG	20,5	679	21,8
MAC0805AEEXN-UL13	8x2x18AWG	22,4	873	21,8
MAC1005AEEXN-UL13	10x2x18AWG	25,6	1081	21,8
MAC1205AEEXN-UL13	12x2x18AWG	26,1	1154	21,8
MAC1605AEEXN-UL13	16x2x18AWG	28,0	1334	21,8
MAC2005AEEXN-UL13	20x2x18AWG	30,9	1677	21,8
MAC2405AEEXN-UL13	24x2x18AWG	33,6	1934	21,8
MAC0205AEEXN-UL13	2x2x16AWG	18,1	514	13,7
MAC0405AEEXN-UL13	4x2x16AWG	19,7	642	13,7
MAC0605AEEXN-UL13	6x2x16AWG	22,7	894	13,7
MAC0805AEEXN-UL13	8x2x16AWG	24,6	1060	13,7
MAC1005AEEXN-UL13	10x2x16AWG	27,6	1269	13,7
MAC1205AEEXN-UL13	12x2x16AWG	28,9	1500	13,7
MAC1605AEEXN-UL13	16x2x16AWG	31,0	1744	13,7
MAC2005AEEXN-UL13	20x2x16AWG	34,1	2065	13,7
MAC2405AEEXN-UL13	24x2x16AWG	37,8	2581	13,7
MAC0201AEEXN-UL13	2x2x14AWG	19,4	593	8,6
MAC0401AEEXN-UL13	4x2x14AWG	21,2	764	8,6
MAC0601AEEXN-UL13	6x2x14AWG	25,6	1144	8,6
MAC0801AEEXN-UL13	8x2x14AWG	27,3	1322	8,6
MAC1001AEEXN-UL13	10x2x14AWG	30,8	1694	8,6
MAC1201AEEXN-UL13	12x2x14AWG	31,5	1834	8,6
MAC1601AEEXN-UL13	16x2x14AWG	35,0	2260	8,6
MAC2001AEEXN-UL13	20x2x14AWG	38,8	2838	8,6
MAC2401AEEXN-UL13	24x2x14AWG	41,6	3212	8,6
MAC0252AEEXN-UL13	2x2x12AWG	20,9	701	5,4
MAC0452AEEXN-UL13	4x2x12AWG	24,3	1081	5,4
MAC0652AEEXN-UL13	6x2x12AWG	28,7	1537	5,4
MAC0852AEEXN-UL13	8x2x12AWG	30,6	1790	5,4
MAC1052AEEXN-UL13	10x2x12AWG	35,0	2207	5,4
MAC1252AEEXN-UL13	12x2x12AWG	36,6	2607	5,4
MAC1652AEEXN-UL13	16x2x12AWG	39,5	3088	5,4
MAC2052AEEXN-UL13	20x2x12AWG	43,5	3672	5,4
MAC2452AEEXN-UL13	24x2x12AWG	47,4	4242	5,4



Note: Information subject to confirmation



Note: Information subject to confirmation

UL 13 - PLTC Cable

SIL - Overall Screened



RAMCRO - UL 13 PLTC - Silicon Rubber



These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

CONSTRUCTION

- Formation:**
Plain annealed copper wire, Stranded
- Insulation:**
Special Mix Silicon Rubber - SIL
- Wrapping:**
at least 1 layer of plastic tape 0,023 mm
- Collective Screen:**
0,026 mm Aluminium / PETP tape over copper drain wire
- Outer Sheath:**
Thermoplastic Low Smoke, Halogen Free - LSZH
- Colour Outer Sheath:**
Black

STANDARD REFERENCES

- UL 13 PLTC Type
- ASTM B3 / B33
- NEC code, sec. 725 PLTC,
- NEC code, sec. 727 ITC,
- UL 1685
- ASTM D 1239
- NF C 32-020
- IRAM IAP

CHARACTERISTICS

- Min. Bending Radius
14 x Cable Diameter
- Hazardous Area Classification
NEC Class I Div. II
IEC Zone 1 - Group 2



TEMPERATURE RANGE

- During Installation:**
-5° C up to +50° C
- Fixed Installation:**
-40° C up to +75°C
- Insulation Operation:**
-40° C up to +90°C



ELECTRICAL DATA

- Insulation Resistance @ 20°C:**
> 200 MOhm*Km
- Test Voltage Core-Core:**
2000 V
- Test Voltage Core-Screen:**
2000 V
- Mutual Capacitance between conductors:**
< 250 nF/km
- Inductance:**
< 1 mH/km
- Operating Voltage:**
300 V



Note: Information subject to confirmation

UL 13 - PLTC Cable

SIL - Overall Screened



These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

RAMCRO CODE	FORMATION (mm²)	OVERALL DIAMETER (mm)	APPROX. CABLE WEIGHT (kg/km)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
MAS0106HEESN-UL13	1x2x20AWG	6,9	58	34.6
MAS0206HEESN-UL13	2x2x20AWG	9,2	95	34.6
MAS0406HEESN-UL13	4x2x20AWG	14,5	270	34.6
MAS0606HEESN-UL13	6x2x20AWG	16,6	350	34.6
MAS0806HEESN-UL13	8x2x20AWG	17,8	418	34.6
MAS1006HEESN-UL13	10x2x20AWG	20,1	499	34.6
MAS1206HEESN-UL13	12x2x20AWG	20,6	556	34.6
MAS1606HEESN-UL13	16x2x20AWG	22,5	683	34.6
MAS2406HEESN-UL13	24x2x20AWG	27,6	981	34.6
MAS0105HEESN-UL13	1x2x18AWG	7,4	69	21.8
MAS0205HEESN-UL13	2x2x18AWG	13,8	227	21.8
MAS0405HEESN-UL13	4x2x18AWG	15,4	315	21.8
MAS0605HEESN-UL13	6x2x18AWG	17,6	414	21.8
MAS0805HEESN-UL13	8x2x18AWG	19,1	500	21.8
MAS1005HEESN-UL13	10x2x18AWG	21,5	601	21.8
MAS1205HEESN-UL13	12x2x18AWG	22,1	676	21.8
MAS1605HEESN-UL13	16x2x18AWG	24,2	837	21.8
MAS2405HEESN-UL13	24x2x18AWG	29,8	1210	21.8
MAS0105HEESN-UL13	1x2x16AWG	8,0	84	13.7
MAS0205HEESN-UL13	2x2x16AWG	14,7	264	13.7
MAS0405HEESN-UL13	4x2x16AWG	16,5	380	13.7
MAS0605HEESN-UL13	6x2x16AWG	19,0	506	13.7
MAS0805HEESN-UL13	8x2x16AWG	20,6	619	13.7
MAS1005HEESN-UL13	10x2x16AWG	23,3	748	13.7
MAS1205HEESN-UL13	12x2x16AWG	24,0	848	13.7
MAS1605HEESN-UL13	16x2x16AWG	26,8	1095	13.7
MAS2405HEESN-UL13	24x2x16AWG	32,5	1541	13.7
MAS0101HEESN-UL13	1x2x14AWG	8,8	107	8.6
MAS0201HEESN-UL13	2x2x14AWG	15,8	318	8.6
MAS0401HEESN-UL13	4x2x14AWG	17,9	475	8.6
MAS0601HEESN-UL13	6x2x14AWG	20,7	644	8.6
MAS0801HEESN-UL13	8x2x14AWG	22,5	798	8.6
MAS1001HEESN-UL13	10x2x14AWG	26,1	1003	8.6
MAS1201HEESN-UL13	12x2x14AWG	26,9	1142	8.6
MAS1601HEESN-UL13	16x2x14AWG	29,6	1437	8.6
MAS2401HEESN-UL13	24x2x14AWG	36,4	2091	8.6
MAS0152HEESN-UL13	1x2x12AWG	8,8	107	5.4
MAS0252HEESN-UL13	2x2x12AWG	15,8	318	5.4
MAS0452HEESN-UL13	4x2x12AWG	17,9	475	5.4
MAS0652HEESN-UL13	6x2x12AWG	20,7	644	5.4
MAS0852HEESN-UL13	8x2x12AWG	22,5	798	5.4
MAS1052HEESN-UL13	10x2x12AWG	26,1	1003	5.4
MAS1252HEESN-UL13	12x2x12AWG	26,9	1142	5.4
MAS1652HEESN-UL13	16x2x12AWG	29,6	1437	5.4
MAS2452HEESN-UL13	24x2x12AWG	36,4	2091	5.4



Note: Information subject to confirmation

UL 13 - PLTC Cable
SIL - Individual and Overall Screened



RAMCRO - UL 13 PLTC - Silicon Rubber



These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

CONSTRUCTION

- Formation: Plain annealed copper wire, Stranded
- Insulation: Special Mix Silicon Rubber - SIL
- Individual Screen: 0,026 mm Aluminium / PETP tape over copper drain wire
- Wrapping: at least 1 layer of plastic tape 0,023 mm
- Collective Screen: 0,026 mm Aluminium / PETP tape over copper drain wire
- Outer Sheath: Thermoplastic Low Smoke, Halogen Free - LSZH
- Colour Outer Sheath: Black

STANDARD REFERENCES

- UL 13 PLTC Type
- ASTM B3 / B33
- NEC code, Sec. 725 PLTC,
- NEC code, Sec. 727 ITC,
- UL 1685
- ASTM D 1239
- NF C 32-020
- IRAM IAP

CHARACTERISTICS

- Min. Bending Radius 14 x Cable Diameter
- Hazardous Area Classification NEC Class I Div. II IEC Zone 1 - Group 2



TEMPERATURE RANGE

- During Installation: -5° C up to +50° C
- Fixed Installation: -40° C up to +75° C
- Insulation Operation: -40° C up to +90° C



ELECTRICAL DATA

- Insulation Resistance @ 20°C: > 200 MOhm*Km
- Test Voltage Core-Core: 2000 V
- Test Voltage Core-Screen: 2000 V
- Mutual Capacitance between conductors: < 250 nF/km
- Inductance: < 1 mH/km
- Operating Voltage: 300 V

Note: Information subject to confirmation



UL 13 - PLTC Cable
SIL - Individual and Overall Screened



These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

RAMCRO CODE	FORMATION (mm²)	OVERALL DIAMETER (mm)	APPROX. CABLE WEIGHT (kg/km)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
MAC0206HEESN-UL13	2x2x20AWG	9,5	105	34,6
MAC0406HEESN-UL13	4x2x20AWG	14,8	292	34,6
MAC0606HEESN-UL13	6x2x20AWG	16,9	381	34,6
MAC0806HEESN-UL13	8x2x20AWG	18,2	458	34,6
MAC1006HEESN-UL13	10x2x20AWG	20,5	549	34,6
MAC1206HEESN-UL13	12x2x20AWG	21,1	616	34,6
MAC1606HEESN-UL13	16x2x20AWG	23,1	760	34,6
MAC2006HEESN-UL13	20x2x20AWG	26,0	944	34,6
MAC2406HEESN-UL13	24x2x20AWG	28,3	1096	34,6
MAC0205HEESN-UL13	2x2x18AWG	14,0	240	21,8
MAC0405HEESN-UL13	4x2x18AWG	15,6	339	21,8
MAC0605HEESN-UL13	6x2x18AWG	18,0	449	21,8
MAC0805HEESN-UL13	8x2x18AWG	19,5	546	21,8
MAC1005HEESN-UL13	10x2x18AWG	22,0	658	21,8
MAC1205HEESN-UL13	12x2x18AWG	22,6	743	21,8
MAC1605HEESN-UL13	16x2x18AWG	24,8	925	21,8
MAC2005HEESN-UL13	20x2x18AWG	28,0	1150	21,8
MAC2405HEESN-UL13	24x2x18AWG	30,5	1340	21,8
MAC0205HEESN-UL13	2x2x16AWG	14,9	277	13,7
MAC0405HEESN-UL13	4x2x16AWG	16,7	404	13,7
MAC0605HEESN-UL13	6x2x16AWG	19,3	541	13,7
MAC0805HEESN-UL13	8x2x16AWG	21,0	665	13,7
MAC1005HEESN-UL13	10x2x16AWG	23,8	805	13,7
MAC1205HEESN-UL13	12x2x16AWG	24,5	915	13,7
MAC1605HEESN-UL13	16x2x16AWG	27,4	1183	13,7
MAC2005HEESN-UL13	20x2x16AWG	30,4	1429	13,7
MAC2405HEESN-UL13	24x2x16AWG	33,2	1672	13,7
MAC0201HEESN-UL13	2x2x14AWG	16,1	333	8,6
MAC0401HEESN-UL13	4x2x14AWG	18,1	502	8,6
MAC0601HEESN-UL13	6x2x14AWG	21,1	683	8,6
MAC0801HEESN-UL13	8x2x14AWG	22,9	848	8,6
MAC1001HEESN-UL13	10x2x14AWG	26,6	1067	8,6
MAC1201HEESN-UL13	12x2x14AWG	27,4	1217	8,6
MAC1601HEESN-UL13	16x2x14AWG	30,1	1537	8,6
MAC2001HEESN-UL13	20x2x14AWG	33,5	1866	8,6
MAC2401HEESN-UL13	24x2x14AWG	37,2	2239	8,6
MAC0252HEESN-UL13	2x2x12AWG	17,5	412	5,4
MAC0452HEESN-UL13	4x2x12AWG	19,9	644	5,4
MAC0652HEESN-UL13	6x2x12AWG	23,2	889	5,4
MAC0852HEESN-UL13	8x2x12AWG	25,9	1149	5,4
MAC1052HEESN-UL13	10x2x12AWG	29,5	1403	5,4
MAC1252HEESN-UL13	12x2x12AWG	30,4	1614	5,4
MAC1652HEESN-UL13	16x2x12AWG	33,5	2055	5,4
MAC2052HEESN-UL13	20x2x12AWG	37,9	2555	5,4
MAC2452HEESN-UL13	24x2x12AWG	41,5	3010	5,4

Note: Information subject to confirmation



UL 13 - PLTC Cable

SIL - Overall Screened with Armour



RAMCRO - UL 13 PLTC - Silicon Rubber



These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

CONSTRUCTION

- Formation:**
Plain annealed copper wire, Stranded
- Insulation:**
Special Mix Silicon Rubber - SIL
- Wrapping:**
at least 1 layer of plastic tape 0,023 mm
- Collective Screen:**
0,026 mm Aluminium / PETP tape over copper drain wire
- Inner Sheath:**
Thermoplastic Low Smoke, Halogen Free - LSZH
- Armour:**
Galvanized Steel Wires Armour
- Outer Sheath:**
Thermoplastic Low Smoke, Halogen Free - LSZH
- Colour Outer Sheath:**
Black

TEMPERATURE RANGE

- During Installation:**
-5° C up to +50° C
- Fixed Installation:**
-40° C up to +75° C
- Insulation Operation:**
-40° C up to +90° C



ELECTRICAL DATA

- Insulation Resistance @ 20°C:** > 200 MOhm*Km
- Test Voltage Core-Core:** 2000 V
- Test Voltage Core-Screen:** 2000 V
- Mutual Capacitance between conductors:** < 250 nF/km
- Inductance:** < 1 mH/km
- Operating Voltage:** 300 V

STANDARD REFERENCES

- UL 13 PLTC Type
- ASTM B3 / B33
- NEC code, Sec. 725 PLTC,
- NEC code, Sec. 727 ITC,
- UL 1685
- ASTM D 1239
- NF C 32-020
- IRAM IAP

CHARACTERISTICS

- Min. Bending Radius
14 x Cable Diameter
- Hazardous Area Classification
NEC Class I Div. II
IEC Zone 1 - Group 2



CABLE PRINTING

RAMCRO S.p.A. – (UL) Listed E345186 Type
PLTC - 1 pr 20 - Shielded - 75°C <Batch>
<MeterMarking>

IDENTIFICATION OF CORES

Pair: ○ ●

UL 13 - PLTC Cable

SIL - Overall Screened with Armour



These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

RAMCRO CODE	FORMATION (mm²)	OVERALL DIAMETER (mm)	APPROX. CABLE WEIGHT (kg/km)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
MAS0106AEESN-UL13	1x2x20AWG	14,3	324	34.6
MAS0206AEESN-UL13	2x2x20AWG	16,9	440	34.6
MAS0406AEESN-UL13	4x2x20AWG	18,8	567	34.6
MAS0606AEESN-UL13	6x2x20AWG	20,9	688	34.6
MAS0806AEESN-UL13	8x2x20AWG	22,9	885	34.6
MAS1006AEESN-UL13	10x2x20AWG	26,1	1095	34.6
MAS1206AEESN-UL13	12x2x20AWG	26,7	1169	34.6
MAS1606AEESN-UL13	16x2x20AWG	29,2	1484	34.6
MAS2406AEESN-UL13	24x2x20AWG	34,8	1998	34.6
MAS0105AEESN-UL13	1x2x18AWG	15,0	361	21.8
MAS0205AEESN-UL13	2x2x18AWG	18,1	508	21.8
MAS0405AEESN-UL13	4x2x18AWG	19,7	629	21.8
MAS0605AEESN-UL13	6x2x18AWG	22,6	876	21.8
MAS0805AEESN-UL13	8x2x18AWG	24,6	1036	21.8
MAS1005AEESN-UL13	10x2x18AWG	27,5	1239	21.8
MAS1205AEESN-UL13	12x2x18AWG	28,8	1464	21.8
MAS1605AEESN-UL13	16x2x18AWG	30,9	1696	21.8
MAS2405AEESN-UL13	24x2x18AWG	37,8	2510	21.8
MAS0105AEESN-UL13	1x2x16AWG	15,6	393	13.7
MAS0205AEESN-UL13	2x2x16AWG	19,0	564	13.7
MAS0405AEESN-UL13	4x2x16AWG	20,8	716	13.7
MAS0605AEESN-UL13	6x2x16AWG	24,5	1039	13.7
MAS0805AEESN-UL13	8x2x16AWG	26,6	1230	13.7
MAS1005AEESN-UL13	10x2x16AWG	30,0	1577	13.7
MAS1205AEESN-UL13	12x2x16AWG	30,7	1699	13.7
MAS1605AEESN-UL13	16x2x16AWG	33,6	2044	13.7
MAS2405AEESN-UL13	24x2x16AWG	40,5	2954	13.7
MAS0101AEESN-UL13	1x2x14AWG	16,4	438	8.6
MAS0201AEESN-UL13	2x2x14AWG	20,1	642	8.6
MAS0401AEESN-UL13	4x2x14AWG	22,9	943	8.6
MAS0601AEESN-UL13	6x2x14AWG	26,8	1259	8.6
MAS0801AEESN-UL13	8x2x14AWG	29,3	1600	8.6
MAS1001AEESN-UL13	10x2x14AWG	32,9	1928	8.6
MAS1201AEESN-UL13	12x2x14AWG	33,7	2094	8.6
MAS1601AEESN-UL13	16x2x14AWG	37,6	2730	8.6
MAS2401AEESN-UL13	24x2x14AWG	45,0	3725	8.6
MAS0152AEESN-UL13	1x2x12AWG	17,8	527	5.4
MAS0252AEESN-UL13	2x2x12AWG	21,6	750	5.4
MAS0452AEESN-UL13	4x2x12AWG	25,6	1198	5.4
MAS0652AEESN-UL13	6x2x12AWG	29,6	1661	5.4
MAS0852AEESN-UL13	8x2x12AWG	32,2	1996	5.4
MAS1052AEESN-UL13	10x2x12AWG	37,1	2603	5.4
MAS1252AEESN-UL13	12x2x12AWG	38,0	2839	5.4
MAS1652AEESN-UL13	16x2x12AWG	41,0	3380	5.4
MAS2452AEESN-UL13	24x2x12AWG	49,3	4667	5.4



Note: Information subject to confirmation



Note: Information subject to confirmation

UL 13 - PLTC Cable

SIL - Individual and Overall Screened with Armour



RAMCRO - UL 13 PLTC - Silicon Rubber



These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

CONSTRUCTION

- Formation:**
Plain annealed copper wire, Stranded
- Insulation:**
Special Mix Silicon Rubber - SIL
- Individual Screen:**
0,026 mm Aluminium / PETP tape over copper drain wire
- Wrapping:**
at least 1 layer of plastic tape 0,023 mm
- Collective Screen:**
0,026 mm Aluminium / PETP tape over copper drain wire
- Inner Sheath:**
Thermoplastic Low Smoke, Halogen Free - LSZH
- Armour:**
Galvanized Steel Wires Armour
- Outer Sheath:**
Thermoplastic Low Smoke, Halogen Free - LSZH
- Colour Outer Sheath:**
Black

TEMPERATURE RANGE

- During Installation:**
-5° C up to +50° C
- Fixed Installation:**
-40° C up to +75° C
- Insulation Operation:**
-40° C up to +90° C



ELECTRICAL DATA

- Insulation Resistance @ 20°C:** > 200 MOhm*Km
- Test Voltage Core-Core:** 2000 V
- Test Voltage Core-Screen:** 2000 V
- Mutual Capacitance between conductors:** < 250 nF/km
- Inductance:** < 1 mH/km
- Operating Voltage:** 300 V

STANDARD REFERENCES

- UL 13 PLTC Type
- ASTM B3 / B33
- NEC code, Sec. 725 PLTC,
- NEC code, Sec. 727 ITC,
- UL 1685
- ASTM D 1239
- NF C 32-020
- IRAM IAP

CHARACTERISTICS

- Min. Bending Radius
14 x Cable Diameter
- Hazardous Area Classification
NEC Class I Div. II
IEC Zone 1 - Group 2



CABLE PRINTING

RAMCRO S.p.A. – (UL) Listed E345186 Type
PLTC - 1 pr 20 - Shielded - 75°C <Batch>
<MeterMarking>

IDENTIFICATION OF CORES

Pair: ○ ●

UL 13 - PLTC Cable

SIL - Individual and Overall Screened with Armour



These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

RAMCRO CODE	FORMATION (mm²)	OVERALL DIAMETER (mm)	APPROX. CABLE WEIGHT (kg/km)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
MAC0206AEESN-UL13	2x2x20AWG	17,1	457	34.6
MAC0406AEESN-UL13	4x2x20AWG	19,1	595	34.6
MAC0606AEESN-UL13	6x2x20AWG	21,2	727	34.6
MAC0806AEESN-UL13	8x2x20AWG	23,3	937	34.6
MAC1006AEESN-UL13	10x2x20AWG	26,6	1160	34.6
MAC1206AEESN-UL13	12x2x20AWG	27,2	1243	34.6
MAC1606AEESN-UL13	16x2x20AWG	29,8	1582	34.6
MAC2006AEESN-UL13	20x2x20AWG	32,8	1867	34.6
MAC2406AEESN-UL13	24x2x20AWG	36,4	2338	34.6
MAC0205AEESN-UL13	2x2x18AWG	18,3	527	21.8
MAC0405AEESN-UL13	4x2x18AWG	20,0	660	21.8
MAC0605AEESN-UL13	6x2x18AWG	23,0	921	21.8
MAC0805AEESN-UL13	8x2x18AWG	25,5	1126	21.8
MAC1005AEESN-UL13	10x2x18AWG	28,7	1443	21.8
MAC1205AEESN-UL13	12x2x18AWG	29,4	1549	21.8
MAC1605AEESN-UL13	16x2x18AWG	31,5	1805	21.8
MAC2005AEESN-UL13	20x2x18AWG	36,0	2377	21.8
MAC2405AEESN-UL13	24x2x18AWG	38,5	2672	21.8
MAC0204AEESN-UL13	2x2x16AWG	19,2	583	13.7
MAC0404AEESN-UL13	4x2x16AWG	21,1	747	13.7
MAC0604AEESN-UL13	6x2x16AWG	24,9	1085	13.7
MAC0804AEESN-UL13	8x2x16AWG	27,0	1288	13.7
MAC1004AEESN-UL13	10x2x16AWG	30,5	1651	13.7
MAC1204AEESN-UL13	12x2x16AWG	31,2	1785	13.7
MAC1604AEESN-UL13	16x2x16AWG	34,2	2153	13.7
MAC2004AEESN-UL13	20x2x16AWG	38,4	2757	13.7
MAC2404AEESN-UL13	24x2x16AWG	41,2	3117	13.7
MAC0201AEESN-UL13	2x2x14AWG	20,4	662	8.6
MAC0401AEESN-UL13	4x2x14AWG	23,2	977	8.6
MAC0601AEESN-UL13	6x2x14AWG	27,1	1309	8.6
MAC0801AEESN-UL13	8x2x14AWG	29,7	1666	8.6
MAC1001AEESN-UL13	10x2x14AWG	33,4	2010	8.6
MAC1201AEESN-UL13	12x2x14AWG	34,2	2188	8.6
MAC1601AEESN-UL13	16x2x14AWG	38,2	2854	8.6
MAC2001AEESN-UL13	20x2x14AWG	41,6	3324	8.6
MAC2401AEESN-UL13	24x2x14AWG	45,7	3905	8.6
MAC0252AEESN-UL13	2x2x12AWG	22,5	872	5.4
MAC0452AEESN-UL13	4x2x12AWG	25,9	1236	5.4
MAC0652AEESN-UL13	6x2x12AWG	30,0	1717	5.4
MAC0852AEESN-UL13	8x2x12AWG	32,7	2068	5.4
MAC1052AEESN-UL13	10x2x12AWG	37,6	2695	5.4
MAC1252AEESN-UL13	12x2x12AWG	38,5	2944	5.4
MAC1652AEESN-UL13	16x2x12AWG	41,6	3515	5.4
MAC2052AEESN-UL13	20x2x12AWG	46,5	4253	5.4
MAC2452AEESN-UL13	24x2x12AWG	50,1	4863	5.4



Note: Information subject to confirmation



Note: Information subject to confirmation

UL 13 - PLTC Cable

Mica Tape + XLPE Overall Screened



RAMCRO - UL 13 PLTC - Mica Tape + XLPE

These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

CONSTRUCTION

- Formation:**
Plain annealed copper wire, Stranded
- Insulation:**
Mica Tape + Cross Liked Polyetilene - XLPE
- Wrapping:**
at least 1 layer of plastic tape 0,023 mm
- Collective Screen:**
0,026 mm Aluminium / PETP tape over copper drain wire
- Outer Sheath:**
Thermoplastic Low Smoke, Halogen Free - LSZH
- Colour Outer Sheath:**
Black

STANDARD REFERENCES

- UL 13 PLTC Type
- ASTM B3 / B33
- NEC code, Sec. 725 PLTC,
- NEC code, Sec. 727 ITC,
- UL 1685
- ASTM D 1239
- NF C 32-020
- IRAM IAP

CHARACTERISTICS

- Min. Bending Radius
14 x Cable Diameter
- Hazardous Area Classification
NEC Class I Div. II
IEC Zone 1 - Group 2



TEMPERATURE RANGE

- During Installation:**
-5° C up to +50° C
- Fixed Installation:**
-40° C up to +75° C
- Insulation Operation:**
-40° C up to +90° C



ELECTRICAL DATA

- Insulation Resistance @ 20°C:**
> 1000 MOhm*Km
- Test Voltage Core-Core:**
2000 V
- Test Voltage Core-Screen:**
2000 V
- Mutual Capacitance between conductors:**
< 250 nF/km
- Inductance:**
< 1 mH/km
- Operating Voltage:**
300 V

UL 13 - PLTC Cable

Mica Tape + XLPE Overall Screened



These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

RAMCRO CODE	FORMATION (mm²)	OVERALL DIAMETER (mm)	APPROX. CABLE WEIGHT (kg/km)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
MAS0106HEEON-UL13	1x2x20AWG	7,5	66	34.6
MAS0206HEEON-UL13	2x2x20AWG	14,4	229	34.6
MAS0406HEEON-UL13	4x2x20AWG	16,1	312	34.6
MAS0606HEEON-UL13	6x2x20AWG	18,6	406	34.6
MAS0806HEEON-UL13	8x2x20AWG	20,1	487	34.6
MAS1006HEEON-UL13	10x2x20AWG	22,8	584	34.6
MAS1206HEEON-UL13	12x2x20AWG	23,5	651	34.6
MAS1606HEEON-UL13	16x2x20AWG	26,2	833	34.6
MAS2406HEEON-UL13	24x2x20AWG	31,7	1152	34.6
MAS0105HEEON-UL13	1x2x18AWG	7,9	76	21.8
MAS0205HEEON-UL13	2x2x18AWG	15,2	256	21.8
MAS0405HEEON-UL13	4x2x18AWG	17,1	357	21.8
MAS0605HEEON-UL13	6x2x18AWG	19,7	471	21.8
MAS0805HEEON-UL13	8x2x18AWG	21,4	569	21.8
MAS1005HEEON-UL13	10x2x18AWG	24,3	685	21.8
MAS1205HEEON-UL13	12x2x18AWG	25,6	802	21.8
MAS1605HEEON-UL13	16x2x18AWG	28,0	989	21.8
MAS2405HEEON-UL13	24x2x18AWG	34,0	1379	21.8
MAS0105HEEON-UL13	1x2x16AWG	37,4	1754	13.7
MAS0205HEEON-UL13	2x2x16AWG	16,1	294	13.7
MAS0405HEEON-UL13	4x2x16AWG	18,2	422	13.7
MAS0605HEEON-UL13	6x2x16AWG	21,2	563	13.7
MAS0805HEEON-UL13	8x2x16AWG	23,1	688	13.7
MAS1005HEEON-UL13	10x2x16AWG	26,8	866	13.7
MAS1205HEEON-UL13	12x2x16AWG	27,6	976	13.7
MAS1605HEEON-UL13	16x2x16AWG	30,3	1214	13.7
MAS2405HEEON-UL13	24x2x16AWG	37,4	1754	13.7
MAS0101HEEON-UL13	1x2x14AWG	9,3	113	8.6
MAS0201HEEON-UL13	2x2x14AWG	17,4	349	8.6
MAS0401HEEON-UL13	4x2x14AWG	19,7	518	8.6
MAS0601HEEON-UL13	6x2x14AWG	23	701	8.6
MAS0801HEEON-UL13	8x2x14AWG	25,7	898	8.6
MAS1001HEEON-UL13	10x2x14AWG	29,2	1090	8.6
MAS1201HEEON-UL13	12x2x14AWG	30,1	1238	8.6
MAS1601HEEON-UL13	16x2x14AWG	33,2	1556	8.6
MAS2401HEEON-UL13	24x2x14AWG	41,1	2260	8.6
MAS0152HEEON-UL13	1x2x12AWG	14,1	261	5.4
MAS0252HEEON-UL13	2x2x12AWG	18,9	426	5.4
MAS0452HEEON-UL13	4x2x12AWG	21,6	653	5.4
MAS0652HEEON-UL13	6x2x12AWG	25,9	929	5.4
MAS0852HEEON-UL13	8x2x12AWG	28,3	1156	5.4
MAS1052HEEON-UL13	10x2x12AWG	32,3	1409	5.4
MAS1252HEEON-UL13	12x2x12AWG	33,4	1613	5.4
MAS1652HEEON-UL13	16x2x12AWG	37,3	2090	5.4
MAS2452HEEON-UL13	24x2x12AWG	46,2	3044	5.4

CABLE PRINTING

RAMCRO S.p.A. – (UL) Listed E345186 Type PLTC - 1 pr 20 - Shielded - 75°C <Batch> <MeterMarking>

IDENTIFICATION OF CORES

Pair: ○ ●



Note: Information subject to confirmation



Note: Information subject to confirmation

UL 13 - PLTC Cable

Mica Tape + XLPE Individual and Overall Screened



RAMCRO - UL 13 PLTC - Mica Tape + XLPE



These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

CONSTRUCTION

- Formation:**
Plain annealed copper wire, Stranded
- Insulation:**
Mica Tape + Cross Liked Polyetilene - XLPE
- Individual Screen:**
0,026 mm Aluminium / PETP tape over copper drain wire
- Wrapping:**
at least 1 layer of plastic tape 0,023 mm
- Collective Screen:**
0,026 mm Aluminium / PETP tape over copper drain wire
- Outer Sheath:**
Thermoplastic Low Smoke, Halogen Free - LSZH
- Colour Outer Sheath:**
Black

TEMPERATURE RANGE

- During Installation:**
-5° C up to +50° C
- Fixed Installation:**
-40° C up to +75°C
- Insulation Operation:**
-40° C up to +90°C



ELECTRICAL DATA

- Insulation Resistance @ 20°C:** > 1000 MOhm*Km
- Test Voltage Core-Core:** 2000 V
- Test Voltage Core-Screen:** 2000 V
- Mutual Capacitance between conductors:** < 250 nF/km
- Inductance:** < 1 mH/km
- Operating Voltage:** 300 V

STANDARD REFERENCES

- UL 13 PLTC Type
- ASTM B3 / B33
- NEC code, Sec. 725 PLTC,
- NEC code, Sec. 727 ITC,
- UL 1685
- ASTM D 1239
- NF C 32-020
- IRAM IAP

CHARACTERISTICS

- Min. Bending Radius
14 x Cable Diameter
- Hazardous Area Classification
NEC Class I Div. II
IEC Zone 1 - Group 2



CABLE PRINTING

RAMCRO S.p.A. – (UL) Listed E345186 Type
PLTC - 1 pr 20 - Shielded - 75°C <Batch>
<MeterMarking>

IDENTIFICATION OF CORES

Pair: ○ ●

UL 13 - PLTC Cable

Mica Tape + XLPE Individual and Overall Screened



These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

RAMCRO CODE	FORMATION (mm²)	OVERALL DIAMETER (mm)	APPROX. CABLE WEIGHT (kg/km)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
MAC0206HEEON-UL13	2x2x20AWG	14,6	242	34,6
MAC0406HEEON-UL13	4x2x20AWG	16,4	337	34,6
MAC0606HEEON-UL13	6x2x20AWG	19,0	441	34,6
MAC0806HEEON-UL13	8x2x20AWG	20,6	533	34,6
MAC1006HEEON-UL13	10x2x20AWG	23,3	641	34,6
MAC1206HEEON-UL13	12x2x20AWG	24,0	719	34,6
MAC1606HEEON-UL13	16x2x20AWG	26,8	923	34,6
MAC2006HEEON-UL13	20x2x20AWG	29,7	1105	34,6
MAC2406HEEON-UL13	24x2x20AWG	32,5	1284	34,6
MAC0205HEEON-UL13	2x2x18AWG	15,4	269	21,8
MAC0405HEEON-UL13	4x2x18AWG	17,4	382	21,8
MAC0605HEEON-UL13	6x2x18AWG	20,1	506	21,8
MAC0805HEEON-UL13	8x2x18AWG	21,9	615	21,8
MAC1005HEEON-UL13	10x2x18AWG	24,8	743	21,8
MAC1205HEEON-UL13	12x2x18AWG	26,1	870	21,8
MAC1605HEEON-UL13	16x2x18AWG	28,6	1078	21,8
MAC2005HEEON-UL13	20x2x18AWG	31,8	1296	21,8
MAC2405HEEON-UL13	24x2x18AWG	35,3	1554	21,8
MAC0205HEEON-UL13	2x2x16AWG	16,4	309	13,7
MAC0405HEEON-UL13	4x2x16AWG	18,5	449	13,7
MAC0605HEEON-UL13	6x2x16AWG	21,6	602	13,7
MAC0805HEEON-UL13	8x2x16AWG	23,5	739	13,7
MAC1005HEEON-UL13	10x2x16AWG	27,3	930	13,7
MAC1205HEEON-UL13	12x2x16AWG	28,1	1052	13,7
MAC1605HEEON-UL13	16x2x16AWG	30,9	1314	13,7
MAC2005HEEON-UL13	20x2x16AWG	34,9	1629	13,7
MAC2405HEEON-UL13	24x2x16AWG	38,1	1903	13,7
MAC0201HEEON-UL13	2x2x14AWG	17,6	364	8,6
MAC0401HEEON-UL13	4x2x14AWG	20,0	545	8,6
MAC0601HEEON-UL13	6x2x14AWG	23,4	740	8,6
MAC0801HEEON-UL13	8x2x14AWG	26,1	950	8,6
MAC1001HEEON-UL13	10x2x14AWG	29,8	1154	8,6
MAC1201HEEON-UL13	12x2x14AWG	30,7	1314	8,6
MAC1601HEEON-UL13	16x2x14AWG	33,8	1655	8,6
MAC2001HEEON-UL13	20x2x14AWG	38,2	2055	8,6
MAC2401HEEON-UL13	24x2x14AWG	41,9	2409	8,6
MAC0252HEEON-UL13	2x2x12AWG	19,2	442	5,4
MAC0452HEEON-UL13	4x2x12AWG	21,9	682	5,4
MAC0652HEEON-UL13	6x2x12AWG	26,3	973	5,4
MAC0852HEEON-UL13	8x2x12AWG	28,7	1213	5,4
MAC1052HEEON-UL13	10x2x12AWG	32,8	1480	5,4
MAC1252HEEON-UL13	12x2x12AWG	33,9	1697	5,4
MAC1652HEEON-UL13	16x2x12AWG	37,9	2201	5,4
MAC2052HEEON-UL13	20x2x12AWG	42,4	2678	5,4
MAC2452HEEON-UL13	24x2x12AWG	47,0	3208	5,4



Note: Information subject to confirmation



Note: Information subject to confirmation

UL 13 - PLTC Cable

Mica Tape + XLPE Overall Screened with Armour



RAMCRO - UL 13 PLTC - Mica Tape + XLPE



These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

CONSTRUCTION

- Formation:**
Plain annealed copper wire, Stranded
- Insulation:**
Mica Tape + Cross Liked Polyetilene - XLPE
- Wrapping:**
at least 1 layer of plastic tape 0,023 mm
- Collective Screen:**
0,026 mm Aluminium / PETP tape over copper drain wire
- Inner Sheath:**
Thermoplastic Low Smoke, Halogen Free - LSZH
- Armour:**
Galvanized Steel Wires Amour
- Outer Sheath:**
Thermoplastic Low Smoke, Halogen Free - LSZH
- Colour Outer Sheath:**
Black

TEMPERATURE RANGE

- During Installation:**
-5° C up to +50° C
- Fixed Installation:**
-40° C up to +75°C
- Insulation Operation:**
-40° C up to +90°C



ELECTRICAL DATA

- Iinsulation Resistance @ 20°C:** > 1000 MOhm*Km
- Test Voltage Core-Core:** 2000 V
- Test Voltage Core-Screen:** 2000 V
- Mutual Capacitance between conductors:** < 250 nF/km
- Inductance:** < 1 mH/km
- Operating Voltage:** 300 V

STANDARD REFERENCES

- UL 13 PLTC Type
- ASTM B3 / B33
- NEC code, Sec. 725 PLTC,
- NEC code, Sec. 727 ITC,
- UL 1685
- ASTM D 1239
- NF C 32-020
- IRAM IAP

CHARACTERISTICS

- Min. Bending Radius
14 x Cable Diameter
- Hazardous Area Classification
NEC Class I Div. II
IEC Zone 1 - Group 2



CABLE PRINTING

RAMCRO S.p.A. – (UL) Listed E345186 Type
PLTC - 1 pr 20 - Shielded - 75°C <Batch>
<MeterMarking>

IDENTIFICATION OF CORES

Pair: ○ ●

UL 13 - PLTC Cable

Mica Tape + XLPE Individual and Overall Screened



These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

RAMCRO CODE	FORMATION (mm²)	OVERALL DIAMETER (mm)	APPROX. CABLE WEIGHT (kg/km)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
MAS0106AEEON-UL13	1x2x20AWG	15,1	354	34.6
MAS0206AEEON-UL13	2x2x20AWG	18,7	512	34.6
MAS0406AEEON-UL13	4x2x20AWG	20,5	621	34.6
MAS0606AEEON-UL13	6x2x20AWG	24,1	897	34.6
MAS0806AEEON-UL13	8x2x20AWG	26,2	1042	34.6
MAS1006AEEON-UL13	10x2x20AWG	29,5	1340	34.6
MAS1206AEEON-UL13	12x2x20AWG	30,2	1420	34.6
MAS1606AEEON-UL13	16x2x20AWG	33,0	1675	34.6
MAS2406AEEON-UL13	24x2x20AWG	39,7	2420	34.6
MAS0105AEEON-UL13	1x2x18AWG	15,6	378	21.8
MAS0205AEEON-UL13	2x2x18AWG	19,5	554	21.8
MAS0405AEEON-UL13	4x2x18AWG	21,4	682	21.8
MAS0605AEEON-UL13	6x2x18AWG	25,8	1021	21.8
MAS0805AEEON-UL13	8x2x18AWG	27,5	1156	21.8
MAS1005AEEON-UL13	10x2x18AWG	31,1	1488	21.8
MAS1205AEEON-UL13	12x2x18AWG	32,3	1635	21.8
MAS1605AEEON-UL13	16x2x18AWG	36,1	2120	21.8
MAS2405AEEON-UL13	24x2x18AWG	42,0	2709	21.8
MAS0105AEEON-UL13	1x2x16AWG	16,2	410	13.7
MAS0205AEEON-UL13	2x2x16AWG	20,4	610	13.7
MAS0405AEEON-UL13	4x2x16AWG	23,2	871	13.7
MAS0605AEEON-UL13	6x2x16AWG	27,2	1150	13.7
MAS0805AEEON-UL13	8x2x16AWG	29,8	1452	13.7
MAS1005AEEON-UL13	10x2x16AWG	33,5	1743	13.7
MAS1205AEEON-UL13	12x2x16AWG	34,3	1866	13.7
MAS1605AEEON-UL13	16x2x16AWG	38,3	2426	13.7
MAS2405AEEON-UL13	24x2x16AWG	45,9	3261	13.7
MAS0101AEEON-UL13	1x2x14AWG	16,9	453	8.6
MAS0201AEEON-UL13	2x2x14AWG	21,7	688	8.6
MAS0401AEEON-UL13	4x2x14AWG	25,8	1072	8.6
MAS0601AEEON-UL13	6x2x14AWG	29,8	1472	8.6
MAS0801AEEON-UL13	8x2x14AWG	32,4	1743	8.6
MAS1001AEEON-UL13	10x2x14AWG	37,3	2288	8.6
MAS1201AEEON-UL13	12x2x14AWG	38,2	2458	8.6
MAS1601AEEON-UL13	16x2x14AWG	41,2	2871	8.6
MAS2401AEEON-UL13	24x2x14AWG	49,6	3900	8.6
MAS0152AEEON-UL13	1x2x12AWG	18,4	539	5.4
MAS0252AEEON-UL13	2x2x12AWG	24,4	938	5.4
MAS0452AEEON-UL13	4x2x12AWG	27,6	1255	5.4
MAS0652AEEON-UL13	6x2x12AWG	32,6	1789	5.4
MAS0852AEEON-UL13	8x2x12AWG	36,3	2319	5.4
MAS1052AEEON-UL13	10x2x12AWG	40,4	2722	5.4
MAS1252AEEON-UL13	12x2x12AWG	41,4	2950	5.4
MAS1652AEEON-UL13	16x2x12AWG	45,9	3612	5.4
MAS2452AEEON-UL13	24x2x12AWG	55,8	5014	5.4



Note: Information subject to confirmation



Note: Information subject to confirmation

UL 13 - PLTC Cable

Mica Tape + XLPE Individual Overall Screened with Armour



RAMCRO - UL 13 PLTC - Mica Tape + XLPE



These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

CONSTRUCTION

- Formation:**
Plain annealed copper wire, Stranded
- Insulation:**
Mica Tape + Cross Liked Polyetilene - XLPE
- Individual Screen:**
0,026 mm Aluminium / PETP tape over copper drain wire
- Wrapping:**
at least 1 layer of plastic tape 0,023 mm
- Collective Screen:**
0,026 mm Aluminium / PETP tape over copper drain wire
- Inner Sheath:**
Thermoplastic Low Smoke, Halogen Free - LSZH
- Armour:**
Galvanized Steel Wires Amour
- Outer Sheath:**
Thermoplastic Low Smoke, Halogen Free - LSZH
- Colour Outer Sheath:**
Black

STANDARD REFERENCES

- UL 13 PLTC Type
- ASTM B3 / B33
- NEC code, Sec. 725 PLTC,
- NEC code, Sec. 727 ITC,
- UL 1685
- ASTM D 1239
- NF C 32-020
- IRAM IAP

CHARACTERISTICS

- Min. Bending Radius
14 x Cable Diameter
- Hazardous Area Classification
NEC Class I Div. II
IEC Zone 1 - Group 2



TEMPERATURE RANGE

- During Installation:**
-5° C up to +50° C
- Fixed Installation:**
-40° C up to +75° C
- Insulation Operation:**
-40° C up to +90° C



ELECTRICAL DATA

- Insulation Resistance @ 20°C:** > 1000 MOhm*Km
- Test Voltage Core-Core:** 2000 V
- Test Voltage Core-Screen:** 2000 V
- Mutual Capacitance between conductors:** < 250 nF/km
- Inductance:** < 1 mH/km
- Operating Voltage:** 300 V



Note: Information subject to confirmation

UL 13 - PLTC Cable

Mica Tape + XLPE Individual Overall Screened with Armour



These cables are designed to connect electronic instrumentation, analog and digital signal circuits. This cable does not spread fame to the top of the tray in the Vertical-Tray Flame Test in UL 1685. Suitable for direct burial applications.

RAMCRO CODE	FORMATION (mm²)	OVERALL DIAMETER (mm)	APPROX. CABLE WEIGHT (kg/km)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
MAC0206AEEON-UL13	2x2x20AWG	19,0	543	34,6
MAC0406AEEON-UL13	4x2x20AWG	20,8	674	34,6
MAC0606AEEON-UL13	6x2x20AWG	24,5	976	34,6
MAC0806AEEON-UL13	8x2x20AWG	26,6	1145	34,6
MAC1006AEEON-UL13	10x2x20AWG	30,1	1470	34,6
MAC1206AEEON-UL13	12x2x20AWG	30,7	1572	34,6
MAC1606AEEON-UL13	16x2x20AWG	33,6	1873	34,6
MAC2006AEEON-UL13	20x2x20AWG	37,8	2406	34,6
MAC2406AEEON-UL13	24x2x20AWG	40,5	2698	34,6
MAC0205AEEON-UL13	2x2x18AWG	19,8	585	21,8
MAC0405AEEON-UL13	4x2x18AWG	21,7	738	21,8
MAC0605AEEON-UL13	6x2x18AWG	26,2	1105	21,8
MAC0805AEEON-UL13	8x2x18AWG	27,9	1264	21,8
MAC1005AEEON-UL13	10x2x18AWG	31,6	1625	21,8
MAC1205AEEON-UL13	12x2x18AWG	32,9	1796	21,8
MAC1605AEEON-UL13	16x2x18AWG	36,7	2334	21,8
MAC2005AEEON-UL13	20x2x18AWG	39,9	2683	21,8
MAC2405AEEON-UL13	24x2x18AWG	43,3	3085	21,8
MAC0205AEEON-UL13	2x2x16AWG	20,7	644	13,7
MAC0405AEEON-UL13	4x2x16AWG	23,6	935	13,7
MAC0605AEEON-UL13	6x2x16AWG	27,6	1242	13,7
MAC0805AEEON-UL13	8x2x16AWG	30,2	1575	13,7
MAC1005AEEON-UL13	10x2x16AWG	34,0	1895	13,7
MAC1205AEEON-UL13	12x2x16AWG	36,2	2285	13,7
MAC1605AEEON-UL13	16x2x16AWG	39,0	2663	13,7
MAC2005AEEON-UL13	20x2x16AWG	42,9	3144	13,7
MAC2405AEEON-UL13	24x2x16AWG	46,7	3611	13,7
MAC0201AEEON-UL13	2x2x14AWG	22,7	826	8,6
MAC0401AEEON-UL13	4x2x14AWG	26,1	1141	8,6
MAC0601AEEON-UL13	6x2x14AWG	30,2	1574	8,6
MAC0801AEEON-UL13	8x2x14AWG	32,9	1875	8,6
MAC1001AEEON-UL13	10x2x14AWG	37,8	2456	8,6
MAC1201AEEON-UL13	12x2x14AWG	38,7	2655	8,6
MAC1601AEEON-UL13	16x2x14AWG	41,9	3126	8,6
MAC2001AEEON-UL13	20x2x14AWG	46,8	3766	8,6
MAC2401AEEON-UL13	24x2x14AWG	50,4	4277	8,6
MAC0252AEEON-UL13	2x2x12AWG	24,7	981	5,4
MAC0452AEEON-UL13	4x2x12AWG	28,0	1332	5,4
MAC0652AEEON-UL13	6x2x12AWG	33,0	1904	5,4
MAC0852AEEON-UL13	8x2x12AWG	36,8	2470	5,4
MAC1052AEEON-UL13	10x2x12AWG	40,9	2910	5,4
MAC1252AEEON-UL13	12x2x12AWG	42,0	3171	5,4
MAC1652AEEON-UL13	16x2x12AWG	46,5	3901	5,4
MAC2052AEEON-UL13	20x2x12AWG	50,9	4567	5,4
MAC2452AEEON-UL13	24x2x12AWG	56,6	5442	5,4



Note: Information subject to confirmation

UL 1277 Tray Cables (UL44)

TC, TC-ER (Exposed Run), TC-ER-JP (Joint Purpose), TC-OF-ER (Optical Fiber, Exposed Run)

The product is a multi-conductor, 600V, 90°C, UL listed, UV and oil-resistant flexible tray cable. The cable can be used without conduit (exposed runs). Recommended applications are intended for use in accordance with Article 336 and other applicable parts of the National Electrical Code (NEC), ANSI/ NFPA 70 in cable trays, in raceways, and wherever supported in outdoor locations by a messenger wire.

Under UL 1277 Standard, Ramcro can propose a wide portfolio of solutions ranging from Hazardous Locations or Exposed Run applications, to solutions which foresee Fiber Optics.

CONSTRUCTION

Formation:
14 AWG to 1000 kcmil annealed stranded Copper/Aluminum conductor

Insulation:
Cross-linked Polyethylene as per UL 44 (Thermoset)

Wrapping:
at least 1 layer of plastic tape

Collective Screen (Optional):
Aluminium / PETP tape over copper drain wire

Outer Sheath:
Polyvinyl Chloride FR - PVC
Outer Sheath Color:
Black

TEMPERATURE RANGE

During Installation:
-5° C up to +90° C
Fixed Installation:
-30° C up to +90° C
Dry/wet
Insulation Operation:
-30° C up to +90° C



ELECTRICAL DATA

Insulation Resistance @ 20°C: >100MΩ*km
Test Voltage Core-Core: 2000 V
Test Voltage Core-Screen: 2000 V
Mutual Capacitance between conductors: < 250 nF/km
Inductance: < 1 mH/km
Operating Voltage: 600/1000/2000 V

STANDARD REFERENCES

- UL 44
- UL 1277
- CSA C22.2 No. 230
- CSA C22.2 No. 239
- CIC
- UL 1581
- UL 2556
- ASTM B3
- ASTM B8
- ASTM B33
- NFPA 70 (National Electrical Code)

CHARACTERISTICS

Min. Bending Radius
12 x cable diameter

Hazardous Area Classification (Optional)
IEC Zone 1 - Group 2



ON REQUEST

- Sunlight Resistant
- Oil Resistant
- Direct Burial
- FT4
- Hazardous Location
- -40°C
- Exposed Run (-ER)
- VW-1
- Available in multi-Core constructions
- Shielded & Unshielded options available
- Available with CIC & CIC-ER options

IDENTIFICATION OF CORES

- 3 Conductors: Black ● White ○ Green ●
- 4 Conductors: Black ● White ○ Red ● Green ●



UL 1277 Tray Cables (UL44)

TC, TC-ER (Exposed Run), TC-ER-JP (Joint Purpose), TC-OF-ER (Optical Fiber, Exposed Run)

Multicore insulated color-coded cores with Bare conductor (optional), binned and covered with high performance PVC or CSPE Jacket.

FORMATION (AWG)*	No. of Corses*	OVERALL DIAMETER (mm)	MAX RESISTANCE CONDUCTOR AT 20°C (Ωm/km)
14	3	10.2	8.62
12	3	11.2	5.43
10	3	12.5	3.41
8	3	16.5	2.14
6	3	18.3	1.35
4	3	21.9	0.848
3	3	23.4	0.673
2	3	25.1	0.534
1	3	28.2	0.423
14	4	11.1	8.62
12	4	12.2	5.43
10	4	14.4	3.41
8	4	18.1	2.14
6	4	20.0	1.35
4	4	24.0	0.848
3	4	25.7	0.673
2	4	27.6	0.534
1	4	31.0	0.423

*Additional formations/number of conductors available

CABLE PRINTING

In example: RAMCRO S.p.A. - (UL) Listed E491205 XHHW TYPE TC 600V Sun Res FT4 Oil Res Dir Bur <month>/<-year> <batch>



UL 1277 Tray Cables (UL83)

TC, TC-ER (Exposed Run), TC-ER-JP (Joint Purpose), TC-OF-ER (Optical Fiber, Exposed Run)

The product is a multi-conductor, 600V, 90°C, UL listed, UV and oil-resistant flexible tray cable. The cable can be used without conduit (exposed runs). Recommended applications are intended for use in accordance with Article 336 and other applicable parts of the National Electrical Code (NEC), ANSI/ NFPA 70 in cable trays, in raceways, and wherever supported in outdoor locations by a messenger wire.

Under UL 1277 Standard, Ramcro can propose a wide portfolio of solutions ranging from Hazardous Locations or Exposed Run applications, to solutions which foresee Fiber Optics.

CONSTRUCTION

Formation:
14 AWG to 1000 kcmil annealed stranded Cop- per/Aluminum conductor

Insulation:
Polyvinyl Chloride (PVC) Insulation. + Nylon Jacket as per UL 83. (Thermoplastic)

Wrapping:
at least 1 layer of plastic tape

Collective Screen (Optional):
Aluminium / PETP tape over copper drain wire

Outer Sheath:
Polyvinyl Chloride FR - PVC
Outer Sheath Color:
Black

TEMPERATURE RANGE

During Installation:
-5° C up to +90° C

Fixed Installation:
-30° C up to +90°C
Dry/wet

Insulation Operation:
-30° C up to +90°C



ELECTRICAL DATA

Insulation Resistance @ 20°C: >1000MΩ*km
Test Voltage Core-Core: 2000 V
Test Voltage Core-Screen: 2000 V
Mutual Capacitance between conductors: < 250 nF/km
Inductance: < 1 mH/km
Operating Voltage: 600/1000/2000 V

STANDARD REFERENCES

- UL 83
- UL 1277
- CSA C22.2 No. 230
- CSA C22.2 No. 239
- CIC
- UL 1581
- UL 2556
- ASTM B3
- ASTM B8
- ASTM B33
- NFPA 70 (National Electrical Code)

CHARACTERISTICS

Min. Bending Radius
12 x cable diameter

Hazardous Area Classification
(Optional)
IEC Zone 1 - Group 2



ON REQUEST

- Sunlight Resistant
- Oil Res istant.
- Direct Burial
- FT4
- Hazardous Location
- -40°C
- Exposed Run (-ER)
- VW-1
- Available in multi-Core constructions
- Shielded & Unshielded options available
- Available with CIC & CIC-ER options

IDENTIFICATION OF CORES

3 Conductors: Black ● White ○ Green ●
4 Conductors: Black ● White ○ Red ●
Green ●



UL 1277 Tray Cables (UL83)

TC, TC-ER (Exposed Run), TC-ER-JP (Joint Purpose), TC-OF-ER (Optical Fiber, Exposed Run)

Multicore insulated color-coded cores with Bare conductor (optional), binded and covered with high performance PVC or CSPE Jacket.

FORMATION (AWG)*	No. of Corses*	OVERALL DIAMETER (mm)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
14	3	9.1	8.62
12	3	10.1	5.43
10	3	12.0	3.41
8	3	15.6	2.14
6	3	17.4	1.35
4	3	22.2	0.848
3	3	23.7	0.673
2	3	25.5	0.534
1	3	28.7	0.423
14	4	9.8	8.62
12	4	11.0	5.43
10	4	13.9	3.41
8	4	17.1	2.14
6	4	19.0	1.35
4	4	24.3	0.848
3	4	26.0	0.673
2	4	28.0	0.534
1	4	31.5	0.423

*Additional formations/number of conductors available

CABLE PRINTING

In example: RAMCRO S.p.A. - (UL) Listed E491205 THHN TYPE TC 600V Sun Res FT4 Oil Res Dir Bur <month>/<year> <batch>



UL 1277 Tray Cables (UL66)

TC, TC-ER (Exposed Run), TC-ER-JP (Joint Purpose), TC-OF-ER (Optical Fiber, Exposed Run)

The product is a multi-conductor, 600V, 90°C, UL listed, UV and oil-resistant flexible tray cable. The cable can be used without conduit (exposed runs). Recommended applications are intended for use in accordance with Article 336 and other applicable parts of the National Electrical Code (NEC), ANSI/NFPA 70 in cable trays, in raceways, and wherever supported in outdoor locations by a messenger wire.

Under UL 1277 Standard, Ramcro can propose a wide portfolio of solutions ranging from Hazardous Locations or Exposed Run applications, to solutions which foresee Fiber Optics.

CONSTRUCTION

Formation:

14 AWG to 1000 kcmil annealed stranded Copper/Aluminum conductor

Insulation:

Polyvinyl Chloride (PVC) Insulation. + Nylon Jacket as per UL 66. (Thermoplastic)

Wrapping:

at least 1 layer of plastic tape

Collective Screen (Optional):

Aluminium / PETP tape over copper drain wire

Outer Sheath:

Polyvinyl Chloride FR - PVC

Outer Sheath Color:

Black

TEMPERATURE RANGE

During Installation:

-5° C up to +90° C

Fixed Installation:

-30° C up to +90° C

Dry/wet

Insulation Operation:

-30° C up to +90° C



ELECTRICAL DATA

Insulation Resistance @ 20°C:

> 1000MΩ*km

Test Voltage Core-Core:

2000 V

Test Voltage Core-Screen:

2000 V

Mutual Capacitance between conductors:

< 250 nF/km

Inductance:

< 1 mH/km

Operating Voltage:

600/1000/2000 V

STANDARD REFERENCES

- UL 66
- UL 1277
- CSA C22.2 No. 230
- CSA C22.2 No. 239
- CIC
- UL 1581
- UL 2556
- ASTM B3
- ASTM B8
- ASTM B33
- NFPA 70 (National Electrical Code)

CHARACTERISTICS

Min. Bending Radius
12 x cable diameter



Hazardous Area Classification
(Optional)
IEC Zone 1 - Group 2

ON REQUEST

- Sunlight Resistant
- Oil Resistant
- Direct Burial
- FT4
- Hazardous Location
- -40°C
- Exposed Run (-ER)
- VW-1
- Available in multi-Core constructions
- Shielded & Unshielded options available
- Available with CIC & CIC-ER options
- Cores with TFFN & TFN Construction can be available complying UL 66

IDENTIFICATION OF CORES

- 3 Conductors: Black● White○ Green●
- 4 Conductors: Black● White○ Red● Green●
- 5 Conductors: ● Black with White Numbers



UL 1277 Tray Cables (UL66)

TC, TC-ER (Exposed Run), TC-ER-JP (Joint Purpose), TC-OF-ER (Optical Fiber, Exposed Run)

Multicore insulated color-coded cores with Bare conductor (optional), binned and covered with high performance PVC or CSPE Jacket.

FORMATION (AWG)*	No. of Corses*	OVERALL DIAMETER (mm)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
18	3	7.6	21.84
18	4	8.2	21.84
18	5	8.8	21.84
18	6	9.5	21.84
18	7	9.5	21.84
18	8	10.1	21.84
18	9	11.0	21.84
18	10	11.7	21.84
18	11	12.0	21.84
18	12	12.0	21.84
18	13	12.6	21.84
18	14	12.6	21.84
18	15	14.0	21.84
18	16	14.0	21.84
18	17	14.6	21.84
18	18	14.6	21.84
18	19	14.6	21.84
18	20	15.0	21.84
16	3	8.3	13.71
16	4	8.9	13.71
16	5	9.6	13.71
16	6	10.4	13.71
16	7	10.4	13.71
16	8	11.1	13.71
16	9	12.1	13.71
16	10	12.9	13.71
16	11	14.1	13.71
16	12	14.1	13.71
16	13	14.7	13.71
16	14	14.7	13.71
16	15	15.4	13.71
16	16	15.4	13.71
16	17	16.2	13.71
16	18	16.2	13.71
16	19	16.2	13.71
16	20	16.6	13.71

CABLE PRINTING

*Additional formations/number of conductors available

In example: RAMCRO S.p.A. - (UL) Listed E491205 TFN TYPE TC 600V Sun Res FT4 Oil Res Dir Bur <month>/<year> <batch>



ramcro.com

Note: Information subject to confirmation



ramcro.com

Note: Information subject to confirmation

UL 2277 Wind Turbine TC
WTTC Wind Turbine Tray Cables

The product is a multi-conductor, 1000V, 90°C, UL listed, UV and oil-resistant flexible tray cable designed for wind turbine and industrial control applications. It is suitable for exposed runs without conduit when marked WTTC-ER, and its reduced outer diameter allows for easier handling and installation in tight or confined spaces. These cables are ideal for use in machine tools, wind turbine generator, control systems, assembly lines, CNC machining centres, bottling equipment, data processing systems, and for interconnections between control panels and machinery, in accordance with NEC Article 336 and UL 2277.

CONSTRUCTION

- Formation: 14 AWG to 1000 kcmil annealed Copper/Aluminum conductor
- Insulation: a) Polyvinyl Chloride (PVC) Insulation. b) Polyvinyl Chloride (PVC) Insulation. + Nylon Jacket c) Cross-linked Polyethylene
- Wrapping: at least 1 layer of plastic tape
- Collective Screen (Optional): Aluminium / PETP tape over copper drain wire
- Armouring (Optional)
- Outer Sheath: Polyvinyl Chloride FR - PVC

TEMPERATURE RANGE

- During Installation: -5° C up to +90° C
- Fixed Installation: +90°C Dry/Wet
- Insulation Operation: -30° C up to +90°C



ELECTRICAL DATA

- Insulation Resistance @ 20°C: >1000MOhm*Km
- Test Voltage Core-Core: 2000 V
- Test Voltage Core-Screen: 2000 V
- Mutual Capacitance between conductors: < 250 nF/km
- Inductance: < 1 mH/km
- Operating Voltage: 1000 V

STANDARD REFERENCES

- UL 83
- UL 66
- UL 44
- UL 1277
- CSA C22.2 No. 230
- CSA C22.2 No. 239
- CIC
- UL 1581
- UL 2556
- ASTM B3
- ASTM B8
- ASTM B33
- NFPA 70 (National Electrical Code)

CHARACTERISTICS

- Min. Bending Radius 8 x cable diameter
- Hazardous Area Classification (Optional) IEC Zone 1 - Group 2



ON REQUEST

- Wet, Damp and Dry Locations
- Sunlight Resistant
- FT4
- Hazardous Location (-HL)
- 40°C
- Exposed Run (-ER)
- VW-1Resistant
- CIC & CIC-ER
- TFFN & TFN Construction acc. to UL 66



UL 2277 Wind Turbine TC
WTTC Wind Turbine Tray Cables

Multicore insulated color-coded cores with Bare conductor (optional), binded and covered with high performance PVC Jacket.

FORMATION (mm²)	No. of Corses	OVERALL DIAMETER (mm)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
3x16 AWG	3	8.66	13.72
3x14 AWG	3	9.78	8.63
3x12 AWG	3	11.05	5.46
3x10 AWG	3	13.44	3.42
3x8 AWG	3	18.57	2.14
3x6 AWG	3	21.06	1.35
3x4 AWG	3	25.86	0.85
3x2 AWG	3	30.23	0.53
4x16 AWG	4	9.78	13.72
4x14 AWG	4	10.57	8.63
4x12 AWG	4	11.99	5.46
4x10 AWG	4	15.14	3.42
4x8 AWG	4	19.96	2.14
4x6 AWG	4	23.75	1.35
4x4 AWG	4	27.94	0.85
4x2 AWG	4	33.02	0.53
5x16 AWG	5	10.06	13.72
5x14 AWG	5	11.43	8.63
5x12 AWG	5	12.75	5.46
5x10 AWG	5	16.69	3.42
5x8 AWG	5	22	2.14
7x16 AWG	7	10.97	13.72
7x14 AWG	7	12.5	8.63
7x12 AWG	7	14	5.46

CABLE PRINTING

In example: RAMCRO S.p.A. - (UL) Listed THHN/THWN-2 TYPE WTTC 600V sun res FT4 Oil Res Dir Bur <month>/<year> <batch>



UL 1569 Metal Clad (MC)

Metal Clad (MC) Cables

This specification covers light weight aluminium interlocked armor Type MC cable with Aluminium or Copper conductors.

These cables are perfect in both Dry and WET applications at permissible voltage of 600 up to 2000 V.

These cables are suitable for use in branch, feeders and service power distribution; in commercial, industrial, institutional, and multi residential buildings, Power, lighting, control and signalling application in accordance with Article 330 and other applicable parts of the National Electrical Code, NFPA 70 and in accordance with Article 330 of the Standard for Electrical Installations, NOM-001-SEDE.

CONSTRUCTION

Formation:

14 AWG to 1000 kcmil annealed Copper/Aluminum conductor

Insulation:

- a) Polyvinyl Chloride (PVC) Insulation. + Nylon Jacket
- b) Cross-linked Polyethylene

Wrapping:

at least 1 layer of plastic tape

Collective Screen (Optional):

Aluminium / PETP tape over copper drain wire

Armouring:

- a) Aluminium interlocked Armor over laid up cores
- b) Stainless steel
- c) Copper-cladded aluminium armour.

Outer Sheath (Optional):

Polyvinyl Chloride FR - PVC

TEMPERATURE RANGE

During Installation:

-5° C up to +90° C

Fixed Installation:

-20° C up to +90° C

Insulation Operation:

-30° C up to +90° C



ELECTRICAL DATA

Insulation Resistance @ 20°C: > 000 MOhm*Km

Test Voltage Core-Core: 2000 V

Test Voltage Core-Screen: 2000 V

Mutual Capacitance between conductors: < 250 nF/km

Inductance: < 1 mH/km

Operating Voltage: 600/2000 V



STANDARD REFERENCES

- UL 83
- UL 44
- UL 66
- TECK90 (CSA C22.2 No. 131)
- CSA C22.2 No. 123 – Metal Sheathed Cables
- UL 1569
- UL 1581
- UI 2225
- UL 2556
- ASTM B3
- ASTM B8
- ASTM B33
- NFPA 70 (National Electrical Code)

CHARACTERISTICS

Min. Bending Radius
8 x cable diameter

Hazardous Area Classification
(Optional)
IEC Zone 1 - Group 2



ON REQUEST

- Sunlight Resistant
- Oil Resistant I & II
- Direct Burial
- Hazardous Location
- FT4
- IEEE 1202
- CT
- CIC
- CIC-ER

IDENTIFICATION OF CORES

- 2 Conductors: Black ● White ○
- 3 Conductors: Black ● White ○ Red ●
- 4 Conductors: Black ● White ○ Red ● Blue ●
- Grounding: Green ●



ramcro.com

Note: Information subject to confirmation

UL 1569 Metal Clad (MC)

Metal Clad (MC) Cables

Multicore insulated color-coded Polyvinyl chloride (PVC) Nylon or XLPE Jacketed phase conductors cabled with Bare conductor (optional), binned and Armored with Aluminum Interlocked armor (or any alternative), covered with FR-PVC Jacket (optional) rated for 90°C in dry or wet locations as per UL 1569, UL 83, UL 44 or UL 66

FORMATION (mm²)	No. of Cores (Phase + Grounding)	OVERALL DIAMETER (mm)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
2x14+14 AWG	2+1	11.9	8.62
3x14+14 AWG	3+1	12.5	8.62
4x14+14 AWG	4+1	13.1	8.62
2x12+12 AWG	2+1	12.8	5.42
3x12+12 AWG	3+1	13.6	5.42
4x12+12 AWG	4+1	14.4	5.42
2x10+10 AWG	2+1	14.5	3.41
3x10+10 AWG	3+1	15.5	3.41
4x10+10 AWG	4+1	16.6	3.41
2x8+10 AWG	2+1	17.1	2.14
3x8+10 AWG	3+1	18.6	2.14
4x8+10 AWG	4+1	20.2	2.14
2x6+8 AWG	2+1	21.3	1.35
3x6+8 AWG	3+1	22	1.35
4x6+8 AWG	4+1	23.9	1.35
2x4+8 AWG	2+1	24.1	0.85
3x4+8 AWG	3+1	27.3	0.85
4x4+8 AWG	4+1	28.7	0.85
2x3+6 AWG	2+1	25.7	0.67
3x3+6 AWG	3+1	28	0.67
4x3+6 AWG	4+1	30.6	0.67
2x2+6 AWG	2+1	27.4	0.53
3x2+6 AWG	3+1	30	0.53
4x2+6 AWG	4+1	32.8	0.53
2x1+6 AWG	2+1	30.9	0.42
3x1+6 AWG	3+1	33.9	0.42
4x1+6 AWG	4+1	37.2	0.42

CABLE PRINTING

In example: RAMCRO S.p.A. - (UL) Listed THHN/THWN-2 TYPE MC 600V Dir Bur <month>/<year> <batch>



ramcro.com

Note: Information subject to confirmation

UL 1263 Irrigation Cable

Type IR Cable

This specification covers type irrigation cable with soft annealed copper stranded conductor, insulated with PE or XLPE, cabled utilizing a PVC inner jacket and an aluminium shield bonded to a PE outer jacket offering excellent mechanical strength and moisture resistance in accordance with NEC Article 675. Cable is conforming to UL 1263. These cables are designed to operate in electric motor driven irrigation systems, landscape lighting or sprinkler systems with a 600V application and are rated 75°C or 90°C. They offer excellent mechanical strength, moisture resistance, and UV protection.

CONSTRUCTION

- Formation:**
14 AWG to 4/0AWG annealed Copper conductor
- Insulation:**
 - a) Polyvinyl Chloride (PVC) Insulation. Nylon Jacket over insulation
 - b) Cross-lynked Polyethylene (XLPE)
 - c) Polyethylene (PE)
- Wrapping:**
at least 1 layer of plastic tape
- Shield:**
Alu/pet Tape
- Inner Sheath (Optional):**
Polyvinyl Chloride (PVC)
- Armouring (Optional):**
Corrugated Aluminium
- Outher Sheath:**
 - a) Polyvinyl Chloride (PVC)
 - b) Polyethylene (PE)

TEMPERATURE RANGE

- During Installation:**
-5° C up to +90° C
- Fixed Installation:**
-20° C up to +90°C
- Insulation Operation:**
-30° C up to +90°C



ELECTRICAL DATA

- Insulation Resistance @ 20°C:** >1000MOhm*Km
- Test Voltage Core-Core:** 2000 V
- Test Voltage Core-Screen:** 2000 V
- Mutual Capacitance between conductors:** < 250 nF/km
- Inductance:** < 1 mH/km
- Operating Voltage:** 600 V

STANDARD REFERENCES

- UL 1263
- UL 2556
- ASTM B3
- ASTM B8
- ASTM B33
- NFPA 70 (National Electrical Code)

CHARACTERISTICS

- Min. Bending Radius
8 x cable diameter
- Hazardous Area Classifica-
tion (Optional)
IEC Zone 1 - Group 2



ON REQUEST

- Sunlight Resistant
- Oil Res istant I & II
- Direct Burial
- Hazardous Location
- FT4
- IEEE 1202
- CT
- CIC
- CIC-ER

IDENTIFICATION OF CORES

- 4C: Black, Blue, Red, Green w/yellow tracer
- 10C: Black, Blue, Red, Green w/Yellow tracer, Brown, Orange, Yellow, Purple, Pink, White
- 11C: Black, Blue, Red, Green w/Yellow tracer, Brown, Orange, Yellow, Purple, Pink, White, Yellow w/Red tracer

Note: Information subject to confirmation

UL 1263 Irrigation Cable

Type IR Cable

Multicore insulated color-coded Polyvinyl chloride (PVC) Nylon or XLPE Jacketed phase conductors cabled, covered with FR-PVC Jacket (optional) rated for 90°C in dry or wet locations as per UL UL 1263

FORMATION (mm²)	OVERALL DIAMETER (mm)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
4X14 AWG	12,9	197
4X12 AWG + 7X16 AWG	17,2	398
4X12 AWG + 7X14 AWG	18,2	463
4X10 AWG + 7X14 AWG	19,9	564
4X14 AWG + 6X18 AWG	16,7	289
4X12 AWG + 6X14 AWG	18,0	432
4X10 AWG + 6X14 AWG	19,7	535

CABLE PRINTING

In example: RAMCRO S.p.A. - (UL) Listed TYPE IR 600V <month>/<year> <batch>

Note: Information subject to confirmation



UL 1309 Marine Shipboard

X110, X110P



The UL 1309 single-conductor marine shipboard cable is intended for use in fixed wiring installations aboard commercial and military vessels. It is suitable for power, lighting, control, and instrumentation circuits in both dry and wet locations. The cable is engineered to withstand exposure to oil, moisture, vibration, and high temperatures, making it ideal for engine rooms, control panels, and other critical shipboard systems. Its low-smoke, zero-halogen (LSZH) construction enhances safety by minimizing toxic emissions in case of fire, supporting compliance with international marine safety regulations.

CONSTRUCTION

Formation:

12 AWG to 1000kcmil annealed Copper conductor

Insulation:

Cross-linked Polyethylene (XLPE) X110/X110P

Wrapping:

at least 1 layer of plastic tape

Inner Sheath (Optional):

Polyvinyl Chloride (PVC)

Armouring (Optional):

Corrugated Aluminium

Outer Sheath:

- a) Polyvinyl Chloride (PVC)
- b) Polyethylene (PE)

TEMPERATURE RANGE

During Installation:

-5° C up to +90° C

Fixed Installation:

-20° C up to +110° C



STANDARD REFERENCES

- UL 1309
- IEEE 1580-2010
- CSA C22.2 No. 245.

CHARACTERISTICS

Min. Bending Radius
8 x cable diameter



ON REQUEST

- ST1
- -40° C

ELECTRICAL DATA

Operating Voltage:

2000 V



UL 4 Armoured Cable

ACHH, ACTH, ACTHH, CT USE

The UL 4 (Armoured Cable) cable types ACHH, ACTH, and ACTHH are designed for electrical applications in commercial and industrial environments where high mechanical protection and operational reliability are required. These armoured cables, compliant with UL 4 (Armoured Cable) standards, are intended for use in branch and feeder circuits, both exposed and concealed, as specified by the National Electrical Code (NEC). They are rated for voltages up to 600 V and operating temperatures up to 75 °C for ACTH and 90 °C for ACHH and ACTHH, depending on the insulation type used.

CONSTRUCTION

Formation:

14 AWG to 1 AWG annealed Copper conductor/
Aluminium

Insulation:

- a) Polyvinyl Chloride (PVC) Insulation. Nylon Jacket over insulation
- b) Polyvinyl Chloride (PVC) Insulation
- c) Cross-linked Polyethylene (XLPE)

Armouring:

Interlocked Armouring

Outer Jacket (optional):

- a) Polyvinyl Chloride (PVC)
- b) Chlorinated Polyethylene
- c) Low Smoke Zero Halogen

TEMPERATURE RANGE

During Installation:

-5° C up to +90° C

Fixed Installation:

-20° C up to +110° C



STANDARD REFERENCES

- UL 4
- UL 1685
- IEEE 1202
- CSA 22.2 No.123

CHARACTERISTICS

Min. Bending Radius
8 x cable diameter



ELECTRICAL DATA

Operating Voltage:

600 V

UL 44 Thermoset Wires

RHH, RHW, RHW-2, SIS, R90, RW90, RW75, XHH, XHHW, XHHW-2



Cable compliant with UL 44 are designed for use in industrial, commercial, and residential electrical installations. They are suitable for power and control circuits in both dry and wet locations and can be installed in conduits, trays, raceways, or directly buried, depending on the type. They offer high performance in terms of thermal, mechanical, and chemical resistance. Single-core cables with copper/Aluminum conductors (solid or stranded), insulated with thermoset materials. Designed to withstand harsh environmental conditions, they offer high performance in electrical insulation, flame resistance, and long-term durability. Available in various configurations to meet installation needs in dry, wet, or corrosive environments.

CONSTRUCTION

Formation:
14 AWG to 1000kcmil annealed Copper conductor

Insulation:
Cross-linked Polyethylene (XLPE)

STANDARD REFERENCES

- UL 44
- CSA C22.2 No. 38
- UL 1581
- NFPA 70 (National Electrical Code)

TEMPERATURE RANGE

During Installation:
-5° C up to +90° C
Fixed Installation:
-20° C up to +90° C



CHARACTERISTICS

Min. Bending Radius
10 x cable diameter



ELECTRICAL DATA

Operating Voltage: 600/1000/2000 V

ON REQUEST

- Dry and Wet Applications
- FT4
- Sunlight Resistant
- FT1
- VW-1
- -40°C

Main Formation (AWG / Kcmil)	OVERALL DIAMETER (mm)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
14	3,5	25,5
12	3,9	37,0
10	4,6	56,8
8	6,1	93,1
6	7,1	142,0
4	8,3	217,1
2	9,8	335,3
1/0	12,4	531,8
2/0	13,6	667,8
3/0	14,9	832,7
4/0	16,4	1038,1
250	18,1	1236,8

UL 66

TFN, TFFN



UL 66 cables are designed for indoor use in industrial and commercial environments where high electrical and mechanical reliability is required. They are commonly used for internal wiring of electrical and electronic equipment, control and automation systems, electrical panels HVAC's (heating, ventilation and air conditioning) systems. Thanks to their high temperature resistance and good flexibility, UL 66 cables are an ideal solution for both fixed and mobile installation in protected environments.

CONSTRUCTION

Formation:
16 AWG to 18kcmil annealed Copper conductor

Insulation:
Polyvinyl Chloride (PVC) Insulation. Nylon Jacket over insulation

STANDARD REFERENCES

- UL 66
- CSA C22.2 No. 38
- UL 1581
- NFPA 70 (National Electrical Code)

TEMPERATURE RANGE

During Installation:
-5° C up to +90° C
Fixed Installation:
-20° C up to +90° C



CHARACTERISTICS

Min. Bending Radius
10 x cable diameter



ELECTRICAL DATA

Operating Voltage: 600 V

ON REQUEST

- Dry and Wet Applications
- VW-1
- Gasoline Resistance
- Oil Res istant

Main Formation (AWG / Kcmil)	OVERALL DIAMETER (mm)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
TFN CABLE		
18	2	10,6
18	2,2	11,3
16	2,3	15,6
16	2,5	16,3
TFFN CABLE		
18	2,2	23,4
16	2,6	14,6

UL 83 Thermoplastic

THHN, THWN, THWN-2, THW, THW-2, TW, TW75, TWN75, TWU, T90



UL 83 cables are designed for indoor use in industrial and commercial environments where high electrical and mechanical reliability is required. They are commonly used for internal wiring of electrical and electronic equipment, control and automation systems, electrical panels HVAC's (heating, ventilation and air conditioning) systems. Thanks to their high temperature resistance and good flexibility, UL 83 cables are an ideal solution for both fixed and mobile installation in protected environments.

CONSTRUCTION

Formation:
14 AWG to 1000kcmil annealed Copper conductor

Insulation:
Polyvinyl Chloride (PVC) Insulation. Nylon Jacket over insulation

TEMPERATURE RANGE

During Installation:
-5° C up to +90° C

Fixed Installation:
-20° C up to +90°C Dry
/ 75°C Wet

Insulation Operation:
0° C up to +90°C



ELECTRICAL DATA

Operating Voltage: 600 V

STANDARD REFERENCES

- UL 83
- UL 1581
- CSA C22.2 No. 75
- NFPA 70 (National Electrical Code)

CHARACTERISTICS

Min. Bending Radius
10 x cable diameter



ON REQUEST

- Dry and Wet Applications
- VW-1
- Sunlight Resistant
- Oil Res istant
- FT1
- Cable Tray
- Gasoline Resistant
- Petroleum Resistant

Main Formation (AWG / Kcmil)	OVERALL DIAMETER (mm)	MAX RESISTANCE CONDUCTOR AT 20°C (Ohm/km)
14	3,5	28,9
12	3,9	40,9
10	4,5	61,6
8	6,1	102,2
6	7,9	167,2
4	9,1	246,2
2	10,6	370,2
1/0	13,7	596,2
2/0	14,9	738,6
3/0	16,2	910,4
4/0	17,6	1123,6
250	19,7	1350,0



Note: Information subject to confirmation



UL GENERAL CABLES



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

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 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



ramcro.com

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>



ramcro.com

Note: Information subject to confirmation



UL FIRE CABLES



E475091

FPLR - fire alarm cable

E475091

TYPE: SOLID
E475091

UL 1424
CONSTRUCTION

Multi-Core, PVC HT 105-Insulation, unscreened or with collective screen, Hi-Performance PVC-Sheath

- Conductor:**
Plain annealed copper wire, Solid
- Insulation:**
Hi Temperature Polyvinylchloride - PVC HT 105°C
- Wrapping:**
at least 1 layer of plastic tape 0,023 mm
- Collective Screen:**
0,026 mm Aluminium / PETP tape over conductor drain wire
- Outer Sheath:**
High-Performance Polyvinylchloride
- Sheath Colour:**
Red



Reference Standard

- UL 1424 (FPLR Type)
- NEC Article 760
- NEC Article 725
- UL 1666
- ASTM D 1329
- NF C 32-020
- IRAM IAP
- EN 50266-2
- IEC 60332-1
- IEC 60332-3

Temperature Range

- During Operation:**
-30°C up to +105°C
- During Installation:**
-5°C up to +50°C

IDENTIFICATION OF CORE

2 Core: ● ●

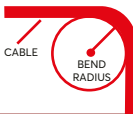
ELECTRICAL DATA

- 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

Fire Resistant



Min. Bending Radius



8 x cable diameter

Low Smoke Halogen free



Note: Information subject to confirmation

FPLR - fire alarm cable

E475091

TYPE: SOLID

UL 1424

CABLE PRINTING

RAMCRO S.p.A. – (UL) Listed E475091 Type FPLR - 2 C 18AWG - Shielded - 105°C <Batch> <MeterMarking>

SCREENED CABLE

RAMCRO CODE	FORMATION [n° x mm2]	OUTER DIAMETER [mm]	WEIGHT [kg/km]
SAR0204HFOCH-UL-FA	2x20AWG	3.9	20
SAR0203HFOCH-UL-FA	2x18AWG	4.3	27
SAR0202HFOCH-UL-FA	2x16AWG	4.9	38
SAR0201HFOCH-UL-FA	2x14AWG	6.2	70
SAR0251HFOCH-UL-FA	2x12AWG	7.2	90

UNSCREENED CABLE

RAMCRO CODE	FORMATION [n° x mm2]	OUTER DIAMETER [mm]	WEIGHT [kg/km]
SSR0204HFOCH-UL-FA	2x20AWG	3.8	22
SSR0203HFOCH-UL-FA	2x18AWG	4.2	29
SSR0202HFOCH-UL-FA	2x16AWG	4.8	35
SSR0201HFOCH-UL-FA	2x14AWG	6.1	75
SSR0251HFOCH-UL-FA	2x12AWG	7.1	92



Note: Information subject to confirmation

FPLR - Armoured fire alarm cable

E475091

TYPE: SOLID
E475091

UL 1424
CONSTRUCTION

Multi-Core, PVC HT 105-Insulation, unscreened or with collective screen, Hi-Performance PVC-Sheath

- Conductor:**
Plain annealed copper wire, Solid
- Insulation:**
Hi Temperature Polyvinylchloride - PVC HT 105°C
- Wrapping:**
at least 1 layer of plastic tape 0,023 mm
- Collective Screen:**
0,026 mm Aluminium / PETP tape over copper drain wire
- Inner Sheath:**
High Performance Polyvinyl chloride
- Armour:**
Galvanized steel wire arm



- Outer Sheath:**
High-Performance Polyvinyl chloride - Hi-PVC
- Sheath Colour:**
Red

IDENTIFICATION OF CORE

2 Core: ●●

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

Reference Standard

- UL 1424 (FPRL Type)
- NEC Article 760
- NEC Article 725
- UL 1666
- ASTM D 1329
- NF C 32-020
- IRAM IAP
- EN 50266-2
- IEC 60332-1
- IEC 60332-3

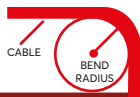
Temperature Range

- During Operation:**
-30°C up to +105°C
- During Installation:**
-5°C up to +50°C

Fire Resistant



Min. Bending Radius



8 x cable
diameter

Low Smoke Halogen free



Note: Information subject to confirmation

FPLR - Armoured fire alarm cable

E475091

TYPE: SOLID

UL 1424

CABLE PRINTING

RAMCRO S.p.A. - (UL) Listed E475091 Type FPLR - 2 C 18AWG - Shielded - 105°C <Batch> <MeterMarking>

SCREENED CABLE

RAMCRO CODE	FORMATION [n° x mm2]	OUTER DIAMETER [mm]	WEIGHT [kg/km]	MAX RESISTANCE AT 20°C [Ohm/km]
SAR0204AFOCH-UL-FA	2x20AWG	7.9	30	34
SAR0203AFOCH-UL-FA	2x18AWG	8.4	41	21.4
SAR0202AFOCH-UL-FA	2x16AWG	8.7	57	13.5
SAR0201AFOCH-UL-FA	2x14AWG	10.3	105	8.5
SAR0251AFOCH-UL-FA	2x12AWG	11.1	135	5.3

UNSCREENED CABLE

RAMCRO CODE	FORMATION [n° x mm2]	OUTER DIAMETER [mm]	WEIGHT [kg/km]	MAX RESISTANCE AT 20°C [Ohm/km]
SSR0204AFOCH-UL-FA	2x20AWG	8.1	33	34
SSR0203AFOCH-UL-FA	2x18AWG	8.5	44	21.4
SSR0202AFOCH-UL-FA	2x16AWG	8.8	52	13.5
SSR0201AFOCH-UL-FA	2x14AWG	10.4	113	8.5
SSR0251AFOCH-UL-FA	2x12AWG	11.2	138	5.3



Note: Information subject to confirmation

FPLP - FPLR - fire alarm

E475091

TYPE: SOLID
E475091

UL 1424
CONSTRUCTION

Multi-Core, PLENUM PVC, unscreened or with collective screen, PLENUM PVC-Sheath

- Conductor:**
Plain annealed copper wire, Solid
- Insulation:**
Plenum Polyvinylchloride - PVC
- Wrapping:**
at least 1 layer of plastic tape 0,023 mm
- Collective Screen:**
0,026 mm Aluminium / PETP tape over copper drain wire
- Outer Sheath:**
Plenum Polyvinylchloride - PVC
- Sheath Colour:**
Red



Reference Standard

- FPLP-FPLR
- NEC Article 760
- NEC Article 725
- UL 910 - PLENUM
- ASTM D 1329
- NF C 32-020
- IRAM IAP
- EN 50266-2
- IEC 60332-1
- IEC 60332-3

Temperature Range

- During Operation:**
-30°C up to +75°C
- During Installation:**
-5°C up to +50°C

IDENTIFICATION OF CORE

2 Core: ● ●

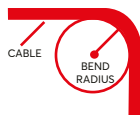
ELECTRICAL DATA

- 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

Fire Resistant



Min. Bending Radius



8 x cable diameter

Low Smoke Halogen free



Note: Information subject to confirmation

FPLP - FPLR - fire alarm

E475091

TYPE: SOLID

CABLE PRINTING

UL 1424

RAMCRO S.p.A. - (UL) Listed E475091 Type FPLR - 2 C 18AWG - Shielded - 75°C <Batch> <MeterMarking>

SCREENED CABLE

RAMCRO CODE	FORMATION [n° x mm2]	OUTER DIAMETER [mm]	WEIGHT [kg/km]
SAR022HFOCH-UL-LP	2x22AWG	3.3	19
SAR0422HFOCX-UL-LP	4x22AWG	3.6	27
SAR0622HFOCX-UL-LP	6x22AWG	4.3	37
SAR0204HFOCH-UL-LP	2x20AWG	4.5	30
SAR0404HFOCX-UL-LP	4x20AWG	5.1	48
SAR0604HFOCX-UL-LP	6x20AWG	6	68
SAR0203HFOCH-UL-LP	2x18AWG	5	38
SAR0403HFOCX-UL-LP	4x18AWG	5.6	64
SAR0603HFOCX-UL-LP	6x18AWG	6.7	91
SAR0202HFOCH-UL-LP	2x16AWG	5.3	45
SAR0402HFOCX-UL-LP	4x16AWG	5.9	76
SAR0602HFOCX-UL-LP	6x16AWG	7.1	109
SAR0201HFOCH-UL-LP	2x14AWG	6.6	77

UNSCREENED CABLE

RAMCRO CODE	FORMATION [n° x mm2]	OUTER DIAMETER [mm]	WEIGHT [kg/km]
SSR022HFOCH-UL-LP	2x22AWG	3.2	14
SSR0422HFOCX-UL-LP	4x22AWG	3.5	22
SSR0622HFOCX-UL-LP	6x22AWG	4.2	32
SSR0204HFOCH-UL-LP	2x20AWG	4.4	25
SSR0404HFOCX-UL-LP	4x20AWG	5	43
SSR0604HFOCX-UL-LP	6x20AWG	5.9	62
SSR0203HFOCH-UL-LP	2x18AWG	4.9	33
SSR0403HFOCX-UL-LP	4x18AWG	5.5	58
SSR0603HFOCX-UL-LP	6x18AWG	6.6	85
SSR0202HFOCH-UL-LP	2x16AWG	5.2	39
SSR0402HFOCX-UL-LP	4x16AWG	5.8	71
SSR0602HFOCX-UL-LP	6x16AWG	7	103
SSR0201HFOCH-UL-LP	2x14AWG	6.5	71
SSR0401HFOCH-UL-LP	4x14AWG	7.3	126



Note: Information subject to confirmation



UL COMMUNICATION CABLES

UL 444



UL 444 (PVC)

Communication Cable (CM, CMR, CMX, CMX OUTDOOR, CMX OUTDOOR – CMR)

Designed for use in telecommunications and data transmission systems, including voice, video, and signal control applications in commercial and residential environments.



CONSTRUCTION

Formation:

Plained Annealed Copper Wire, Stranded from 30 to 6 AWG

Fire Protection Tape (Optional)

Insulation:

High-Temperature Polyvinyl Chloride (PVC)

Fillers (Optional)

Wrapping (Optional):

at least 1 layer of plastic tape (Optional)

Screen:

Aluminium/PETP tape over copper drain wire

Braid (optional):

Tinned or bare copper or aluminum braid

Armouring Protection (optional):

Steel Wire Armouring (SWA)

Outer sheath:

High-Temperature Polyvinyl Chloride (PVC)

Colour Outer Sheath:

Any color

STANDARD REFERENCES

- UL 444
- ASTM B3/B33
- CSA 22.2 No. 214
- NEC art. 800
- UL 1581 (Sun. Res; VW1)
- UL 910

ON REQUEST

- Sunlight Resistant
- UL 1666 (Rizer Test)
- UL 1685
- VW-1
- Armouring and/or Braid

TEMPERATURE RANGE

Fixed Installation:

- 30°C up to +105°C

During Installation:

- 5°C up to +50°C

Insulation Operation:

- 30°C up to +105°C



CHARACTERISTICS

- High Flexibility
- Flame retardant characteristics
- Multiple Conductors
- Sunlight & Moisture Resistant
- Common in **structured cabling systems**, such as **Category 5e, 6, 6A** cables used in LANs, telephone wiring, and building automation systems



ON REQUEST

Personalized colour code and outer sheath

UL 444 (PVC)

Communication Cable (CM, CMR, CMX, CMX OUTDOOR, CMX OUTDOOR – CMR)

Designed for use in telecommunications and data transmission systems, including voice, video, and signal control applications in commercial and residential environments.

Part Number	Formation [n° x AWG]	Nominal Out. Diameter [mm]	Max Resistance at 20°C [Ohm/km]"	Nominal Weight [kg/km]
MAS0107HEOCN-UL444	1x2x22AWG	4,50	69,4	35
MAS0207HEOCN-UL444	2x2x22AWG	5,80	69,4	53
MAS0407HEOCN-UL444	4x2x22AWG	6,50	69,4	77
MAS0607HEOCN-UL444	6x2x22AWG	7,50	69,4	103
MAS1207HEOCN-UL444	12x2x22AWG	9,60	69,4	175
MAS2407HEOCN-UL444	24x2x22AWG	13,30	34	330
MAS0106HEOCN-UL444	1x2x20AWG	4,90	34	41
MAS0206HEOCN-UL444	2x2x20AWG	6,30	34	64
MAS0406HEOCN-UL444	4x2x20AWG	7,10	34	97
MAS0606HEOCN-UL444	6x2x20AWG	8,30	34	132
MAS1206HEOCN-UL444	12x2x20AWG	10,90	34	238
MAS2406HEOCN-UL444	24x2x20AWG	14,80	34	440
MAS0105HEOCN-UL444	1x2x18AWG	5,30	23,4	52
MAS0205HEOCN-UL444	2x2x18AWG	7,00	23,4	84
MAS0405HEOCN-UL444	4x2x18AWG	8,00	23,4	131
MAS0605HEOCN-UL444	6x2x18AWG	9,40	23,4	183
MAS1205HEOCN-UL444	12x2x18AWG	12,70	23,4	342
MAS2405HEOCN-UL444	24x2x18AWG	17,10	23,4	629
MAS0103HEOCN-UL444	1x2x16AWG	5,90	14,6	66
MAS0203HEOCN-UL444	2x2x16AWG	8,00	14,6	111
MAS0403HEOCN-UL444	4x2x16AWG	9,10	14,6	183
MAS0603HEOCN-UL444	6x2x16AWG	11,00	14,6	264
MAS1203HEOCN-UL444	12x2x16AWG	14,60	14,6	491
MAS2403HEOCN-UL444	24x2x16AWG	19,80	14,6	915

Note: Information subject to confirmation

Note: Information subject to confirmation

UL 444 (PO)

Communication Cable (CM, CMR, CMX, CMX OUTDOOR, CMX OUTDOOR – CMR, CMG)

Designed for use in telecommunications and data transmission systems, including voice, video, and signal control applications in commercial and residential environments.



CONSTRUCTION

Formation:

Plained Annealed Copper Wire, Stranded from 30 to 6 AWG

Fire Protection Tape (Optional)

Insulation:

Cross-lynked Poliolefine (XLPE)

Fillers (Optional)

Wrapping (Optional):

at least 1 layer of plastic tape

Screen:

Aluminium/PETP tape over copper train wire

Braid (optional):

Tinned or bare copper or aluminum braid

Armouring Protection (optional):

Steel Wire Armouring (SWA)

Outer sheath:

Low Smoke Zero Halogen Poliolefine (LSZH)

Colour Outer Sheath:

Any color

STANDARD REFERENCES

- UL 444
- ASTM B3/B33
- CSA 22.2 No. 214
- NEC art. 800
- UL 1581
- UL 910

ON REQUEST

- Sunlight Resistant
- UL 1666 (Rizer Test)
- UL 1685
- VW-1
- Armouring and/or Braid

TEMPERATURE RANGE

Fixed Installation:

- 30°C up to +105°C

During Installation:

- 5°C up to +50°C

Insulation Operation:

- 30°C up to +105°C



ELECTRICAL DATA

Operating Voltage: 300 V

Impedance: 100 Ω (typical for data cables)

Capacitance: ≤ 50 pF/ft (for twisted pair data cables)

IDENTIFICATION OF CORES

Black and
White Numbered ● ○

CHARACTERISTICS

- High Flexibility
- Flame retardant characteristics
- Multiple Conductors
- Sunlight & Moisture Resistant
- Common in **structured cabling systems**, such as **Category 5e, 6, 6A** cables used in LANs, telephone wiring, and building automation systems



ON REQUEST

Personalized colour code and outer sheath

UL 444 (PO)

Communication Cable (CM, CMR, CMX, CMX OUTDOOR, CMX OUTDOOR – CMR)

Designed for use in telecommunications and data transmission systems, including voice, video, and signal control applications in commercial and residential environments.

Part Number	Formation [n° x AWG]	Nominal Out. Diameter [mm]	Max Resistance at 20°C [Ohm/km]"	Nominal Weight [kg/km]
MAS0107HEEXN-UL444	1x2x22AWG	6,30	69,4	56
MAS0207HEEXN-UL444	2x2x22AWG	8,30	69,4	86
MAS0407HEEXN-UL444	4x2x22AWG	9,40	69,4	118
MAS0607HEEXN-UL444	6x2x22AWG	10,90	69,4	153
MAS0106HEEXN-UL444	1x2x20AWG	6,70	34	63
MAS0206HEEXN-UL444	2x2x20AWG	8,90	34	99
MAS0406HEEXN-UL444	4x2x20AWG	10,10	34	140
MAS0606HEEXN-UL444	6x2x20AWG	11,70	34	186
MAS0105HEEXN-UL444	1x2x18AWG	7,10	23,4	75
MAS0205HEEXN-UL444	2x2x18AWG	9,70	23,4	120
MAS0405HEEXN-UL444	4x2x18AWG	11,00	23,4	178
MAS0605HEEXN-UL444	6x2x18AWG	12,90	23,4	241
MAS0103HEEXN-UL444	1x2x16AWG	7,70	14,6	91
MAS0203HEEXN-UL444	2x2x16AWG	10,70	14,6	152
MAS0403HEEXN-UL444	4x2x16AWG	12,20	14,6	234
MAS0603HEEXN-UL444	6x2x16AWG	14,40	14,6	321

UL 444 - BUS PROTOCOL

Communication Cable (CM, CMR, CMX, CMX OUTDOOR, CMX OUTDOOR – CMR, CMG)

Designed for use in telecommunications and data transmission systems, including voice, video, and signal control applications in commercial and residential environments.



CONSTRUCTION

Formation:

Plained Annealed Copper Wire, Stranded from 18 to 16 AWG

Insulation:

Cross-linked Polyolefine (XLPE)

Fillers (Optional)

Wrapping (Optional):

at least 1 layer of plastic tape

Screen:

Aluminium/PETP tape

Braid:

Tinned copper braid

Armouring Protection (optional):

Steel Wire Armouring (SWA)

Outer sheath:

Low Smoke Zero Halogen Polyolefine (LSZH)

Colour Outer Sheath:

Any color

STANDARD REFERENCES

- UL 444
- ASTM B3/B33
- CSA 22.2 No. 214
- NEC art. 800
- UL 1581
- UL 910

ON REQUEST

- Sunlight Resistant
- UL 1666 (Rizer Test)
- UL 1685
- VW-1
- Armouring and/or Braid

TEMPERATURE RANGE

Fixed Installation:

- 30°C up to +105°C

During Installation:

- 5°C up to +50°C

Insulation Operation:

- 30°C up to +105°C



CHARACTERISTICS

- High Flexibility
- Flame retardant characteristics
- Multiple Conductors
- Sunlight & Moisture Resistant
- Common in **structured cabling systems**, such as **Category 5e, 6, 6A** cables used in LANs, telephone wiring, and building automation systems



ON REQUEST

Personalized colour code and outer sheath

UL 444 - BUS PROTOCOL

Communication Cable (CM, CMR, CMX, CMX OUTDOOR, CMX OUTDOOR – CMR)

Designed for use in telecommunications and data transmission systems, including voice, video, and signal control applications in commercial and residential environments.

Part Number	Formation [n° x AWG]	Nominal Out. Diameter [mm]	Max Resistance at 20°C [Ohm/km]"	Nominal Weight [kg/km]
MAS0107HEEXN-UL444	1x2x22AWG	6,30	69,4	56
MAS0207HEEXN-UL444	2x2x22AWG	8,30	69,4	86
MAS0407HEEXN-UL444	4x2x22AWG	9,40	69,4	118
MAS0607HEEXN-UL444	6x2x22AWG	10,90	69,4	153
MAS0106HEEXN-UL444	1x2x20AWG	6,70	34	63
MAS0206HEEXN-UL444	2x2x20AWG	8,90	34	99
MAS0406HEEXN-UL444	4x2x20AWG	10,10	34	140
MAS0606HEEXN-UL444	6x2x20AWG	11,70	34	186
MAS0105HEEXN-UL444	1x2x18AWG	7,10	23,4	75
MAS0205HEEXN-UL444	2x2x18AWG	9,70	23,4	120
MAS0405HEEXN-UL444	4x2x18AWG	11,00	23,4	178
MAS0605HEEXN-UL444	6x2x18AWG	12,90	23,4	241
MAS0103HEEXN-UL444	1x2x16AWG	7,70	14,6	91
MAS0203HEEXN-UL444	2x2x16AWG	10,70	14,6	152
MAS0403HEEXN-UL444	4x2x16AWG	12,20	14,6	234
MAS0603HEEXN-UL444	6x2x16AWG	14,40	14,6	321

UL 444 - FIELDBUS FOUNDATION

Communication Cable (CM, CMR, CMX, CMX OUTDOOR, CMX OUTDOOR – CMR, CMG)

Designed for use in telecommunications and data transmission systems, including voice, video, and signal control applications in commercial and residential environments.



CONSTRUCTION

Formation:

Plained Annealed Copper Wire, Stranded from 18 to 16 AWG

Insulation:

Cross-linked Polyolefine (XLPE)

Fillers (Optional)

Wrapping (Optional):

at least 1 layer of plastic tape

Individual Screen:

Aluminium/PETP tape + Drain Wire

Collective Screen:

Aluminium/PETP tape + Tinned copper braid

Armouring Protection (optional):

Steel Wire Armouring (SWA)

Outer sheath:

Low Smoke Zero Halogen Polyolefine (LSZH)

Colour Outer Sheath:

Any color

STANDARD REFERENCES

- UL 444
- ASTM B3/B33
- CSA 22.2 No. 214
- NEC art. 800
- UL 1581
- UL 910

ON REQUEST

- Sunlight Resistant
- UL 1666 (Rizer Test)
- UL 1685
- VW-1
- Armouring and/or Braid

TEMPERATURE RANGE

Fixed Installation:

- 30°C up to +105°C

During Installation:

- 5°C up to +50°C

Insulation Operation:

- 30°C up to +105°C



CHARACTERISTICS

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- Flame retardant characteristics
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- Sunlight & Moisture Resistant
- Common in **structured cabling systems**, such as **Category 5e, 6, 6A** cables used in LANs, telephone wiring, and building automation systems



ON REQUEST

Personalized colour code and outer sheath

UL 444 - FIELDBUS FOUNDATION

Communication Cable (CM, CMR, CMX, CMX OUTDOOR, CMX OUTDOOR – CMR)

Designed for use in telecommunications and data transmission systems, including voice, video, and signal control applications in commercial and residential environments.

Part Number	Formation [n° x AWG]	Nominal Out. Diameter [mm]	Max Resistance at 20°C [Ohm/km]"	Nominal Weight [kg/km]
SDS0105HUEXX-T-FB444	1x2x18AWG	10,20	23,8	127
SDS0205HUEXX-T-FB444	2x2x18AWG	14,70	23,8	229
SDS0405HUEXX-T-FB444	4x2x18AWG	17,00	23,8	345
SDS0605HUEXX-T-FB444	6x2x18AWG	20,20	23,8	474
SDS0103HUEXX-T-FB444	1x2x16AWG	11,90	15,5	174
SDS0203HUEXX-T-FB444	2x2x16AWG	17,60	15,5	307
SDS0403HUEXX-T-FB444	4x2x16AWG	20,50	15,5	484
SDS0603HUEXX-T-FB444	6x2x16AWG	24,60	15,5	668

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.

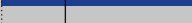
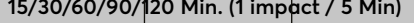
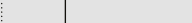
Product range under sub-brand RAMFIRECRO-F3 Manufactured according to:

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

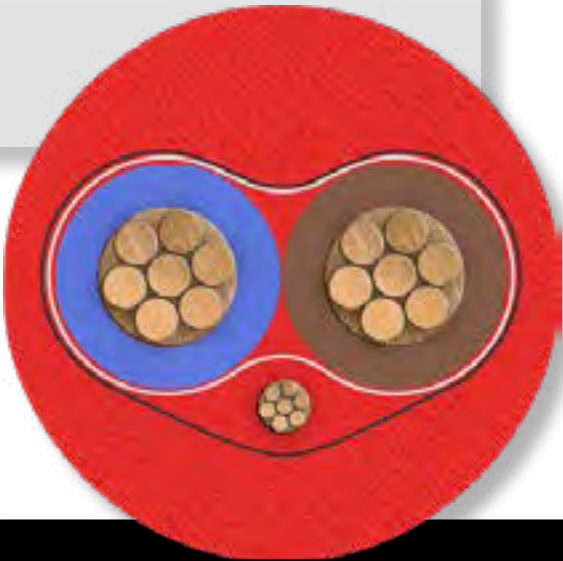
FIRE RESISTANT TEST INFORMATION

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.



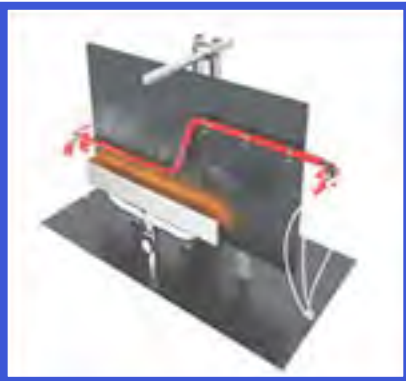
FIRE RESISTANT TEST INFORMATION



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



Note: Information subject to confirmation

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.



Note: Information subject to confirmation

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 568g



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
1 mile (nautic 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
1 Centi = 0,01 Gy
1 rad = 100 Joule
1 rad = cJ/kg = 0,01Gy
1 Mrad = 1 · 10⁶ 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 · 10⁶ Joule
= 746 W · h
1 BTU (brit. therm. unit) = 1055 Joule

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 µuf/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
A	approved national design
AB	Outdoor cable with lighting protection
AD	Outdoor cable with differential protection
AJ-	Outdoor cable with induction protection
ASLH	self-supporting communication cables for high voltage overhead lines
B	armouring
B	spinning of textile yarn
b	armouring
(1B...)	one layer of steel tape... thickness of the steel tape in mm
(2B...)	two layers of steel tape... thickness of the steel tape in mm
BD	unit-type stranding
BLK	bare copper-conductor without insulation
BZ	bronze conductor
C	screen of copper wire braiding
C	screen of copper wire spinning
C	outer protection of jute and viscous compound
Cu	copper wire
(-Cu)	total cross-section of copper screens (mm2)
D	screen of copper wires
(D)	screen of helically applied copper wires
DM	Dieselhorst-Martin quad
Dreier	three cores in triple stranded
E	copper drain wire
E(e)	protective covering of viscous compound with embedded layer of plastic tape
e	single wire, solid
F	cable cores assembly with petrol-jelly
F	foil wrapping
F	Flat cable
F	star quad for railway cable
F	star quad for phantom circuits
(F...)	flat wire armouring... thickness in mm
OF	jelly lled cable core, lling compound of hard substances
FR	flame retardant
f	exible, fine wire stranding
ff	extra fine wire stranding
G	insulation or sheath material of rubber (NR) or (SBR)
G-	Mining cable
GJ	Mining cable with induction protection
GS	glass fibre whipping or braiding
2G	insulation or jacket of silicone rubber, (SIR)
3G	insulation or jacket of ethylene propylene rubber, (EPR)
4G	insulation or jacket of ethylene vinylacetate rubber (EVA)
5G	insulation or jacket of chloroprene rubber (CR)
6G	insulation or jacket of chlorosulphonated polyethylene
(CSM),	Hypalon
7G	insulation or jacket of Flouorelastomer (FKM)
8G	insulation or jacket of Nitrile rubber (NBR)
9G	PE-C rubber (CM)
53G	CM, chlorinated Polyethylene
H	insulation or jacket of halogen-free compound
H	Harmonized Documents
(H...)	maximal value of mutual capacitance (nF /km)
(HS)	semi-conducting tape of layer
HX	cross-linked, halogen-free polymer compound
...IMF	individual stranding element (pairs or single cores etc.)
IMF	in metal foil and drain wire
-J	several stranding elements in metalfoil and drain wire
-JZ	cable with green-yellow earth core and cores with inprinted numbers
K	copper-tape
(K)	inner sheath and longitudinally folded copper tape
LA	tinsel conductor (flat copper wire stranded over the thread of synthetic fibres)
LD	corrugated aluminium sheath
Lg	in layers stranding
Li	stranded wires conductor
(L)Y	laminated sheath Al-tape and PVC-jacket
(L)2Y	laminated sheath Al-tape and PE-jacketl
2L	double enamel coating as insulation
M	plastic-sheath cable
M	lead sheath
Mz	alloyed lead sheath
(mS)	magnetic shield
N	VDE standard

(N)	in adapted to VDE standard
NC	non-corrosiv, smoke-gase
NF	natural colour
-O	cable without green-yellow earth core
-OZ	cable without green-yellow earth core and cores with imprinted numbers
ö	oil-resistant
02Y	Foam-PE, insulation (cellular PE)
Q	Steel wire braiding
(R...)	round wire, diameter in mm
RAGL-	Compensating cable for thermocoupling
RD-	Rhenomatic cable
RE	Computer cable
RG-	Coaxial cable according MIL specification
re	round, single wire
rm	round, multiwire
RS-	computer switchboard cable
S	silk whipping
S	signal cables for railways
(S...)	nominal value of mutual capacitance (nF /km)
-S	signal cable for German Railway
S-	Switchboard cable
SL	flexible sheathed cable
2S	two layers of silk whipping
St	star quad for phantom circuits
St I	star quad in telephone cables for lager distance
St III	star quad in local cables
(St)	static screen
Staku	copper clad steel wire
Staku-Li	copper clad steel stranded wires
...t	termite protection
T	supporting element for overhead cable
T-	fan out cable
TF	carrier frequency of pairs or quads triple
TiC	triple in copper wire braid
TiMF	triple in metal foil
U	braiding of textile fibres
VGD	gold-plated
VN	ickel-plated VS silver-plated
VZK	galvanized VZN tinned
W	corrugated steel sheath
W	high heat resistant
W	corrugated steel sheath
X	cross-linked polyvinylchlorid (X-PVC) or other materials
XPE	cross-linked polyethylene (X-PE)
2X	cross-linked polyethylene
7X	cross-linked Ethylentetrafluorethylen (X-ETFE)
10X	cross-linked Polyvinylidenfluorid (X-PVDF)
Y	PVC, polyvinylchloride
Yu	PVC, polyvinylchloride, non-flammable, flame-retardant
Yv	PVC, polyvinylchloride, with reinforced sheath
YV	Equipment wires with tinned conductor
Yw	PVC, polyvinylchlorid, heat resistant upto 90°C
2Y	Polyethylene (PE)
2Yv	Polyethylene, reinforced sheath
02Y	Cellular polyethylene
02YS	insulation of cellular polyethylene with outer PE-skin
2YHO	insulation of air-spaced polyethylene
3Y	insulation polystyrene (PS), Styroflex
4Y	insulation or jacket of polyamide (PA)
5Y	insulation or jacket of polytetrafluorethylene (PTFE)
5YX	Perfluoralkoxy (PFA)
6Y	Perfluoroethylene-propylene (FEP)
7Y	insulation or jacket of ethylentetrafluorethylen (ETFE)
8Y	insulation of polyimid (PI)
9Y	polypropylen (PP)
10Y	PVDF, Polyvinylidene fluoride
11Y	polyurethan (PUR)
12Y	TPE-E, TPE
13Y	TPE-EE, TPE on base of Polyester-Ester
31Y	TPE-S, TPE on base of Polystyrol
41Y	TPE-A, TPE on base of Polyamide
51Y	PFA, Per uor-Alkoxylalkane
71Y	ECTFE, Monochlorotrifluorethylene
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.



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

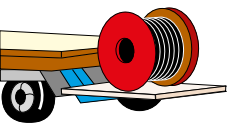
1. Inspect every cable reel for damage before accepting the shipment. Be particularly alert for cable damage if:
2. A reel is lying flat on its side
3. Several reels are stacked one over the other
4. Other freight is stacked on a reel
5. Cable drums are without planks or broken
6. Nails have been driven 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.

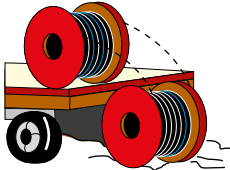
Thus the following is a list of Do's and Don'ts that should be followed while handling and storing the cables before it is put to use.

✓ DO's

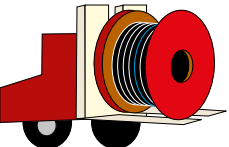


When off loading reels from a truck, lower reels carefully using a hydraulic gate, hoist or forklift truck.

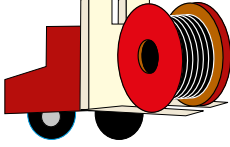
✗ DON'ts



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



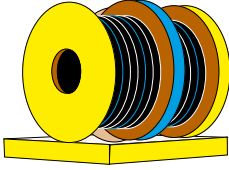
If a fork lift is used, approach the reel from the flange side. Position the forks such that the reel is lifted by both reel flanges. Also Consideration should be given to, Traffic patterns during off-loading & damage during the time in storage.



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.

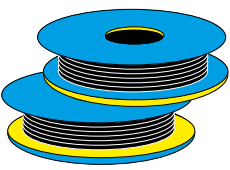
HANDLING, STORAGE AND LAYING OF CABLES

✓ DO's

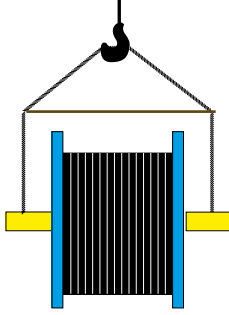


Cable reels should be stored on hard surfaces resting on the flanges edge (flanges vertical). Align reels flange to flange and, if possible, arrange so that first in is first out.

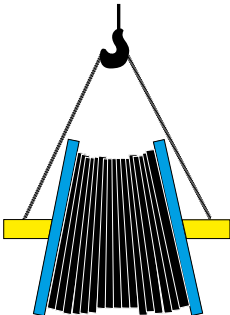
✗ DON'ts



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 x 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.

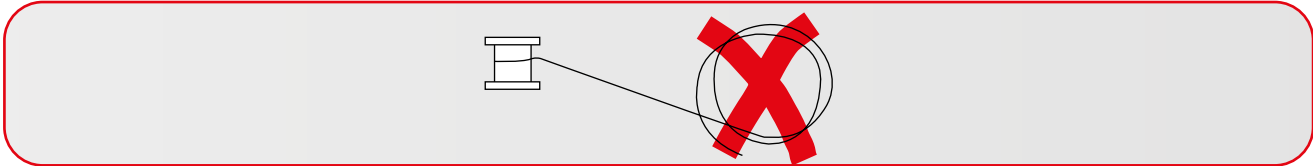
Preferably installation is done during morning hours when the ambient temperature is low.

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

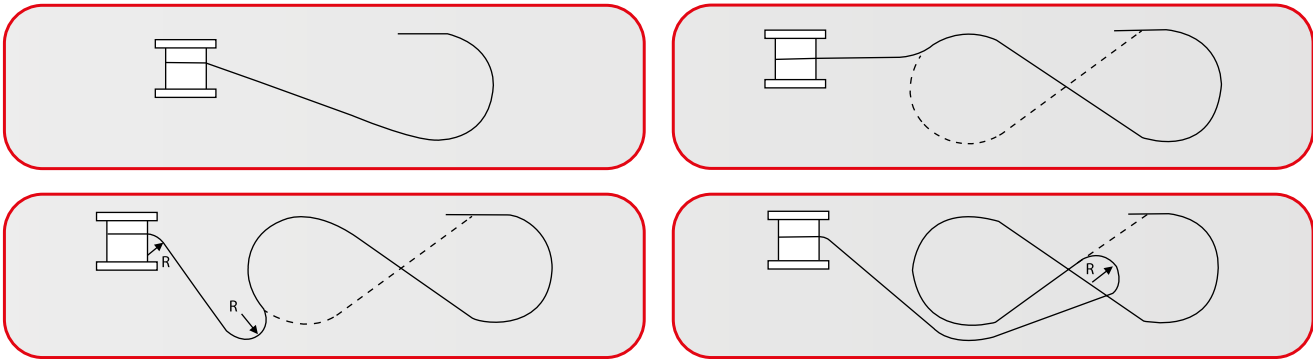
When pulled on cable trays/or any uneven surface, special attentions is needed to welding or unusually
rough terrains.

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

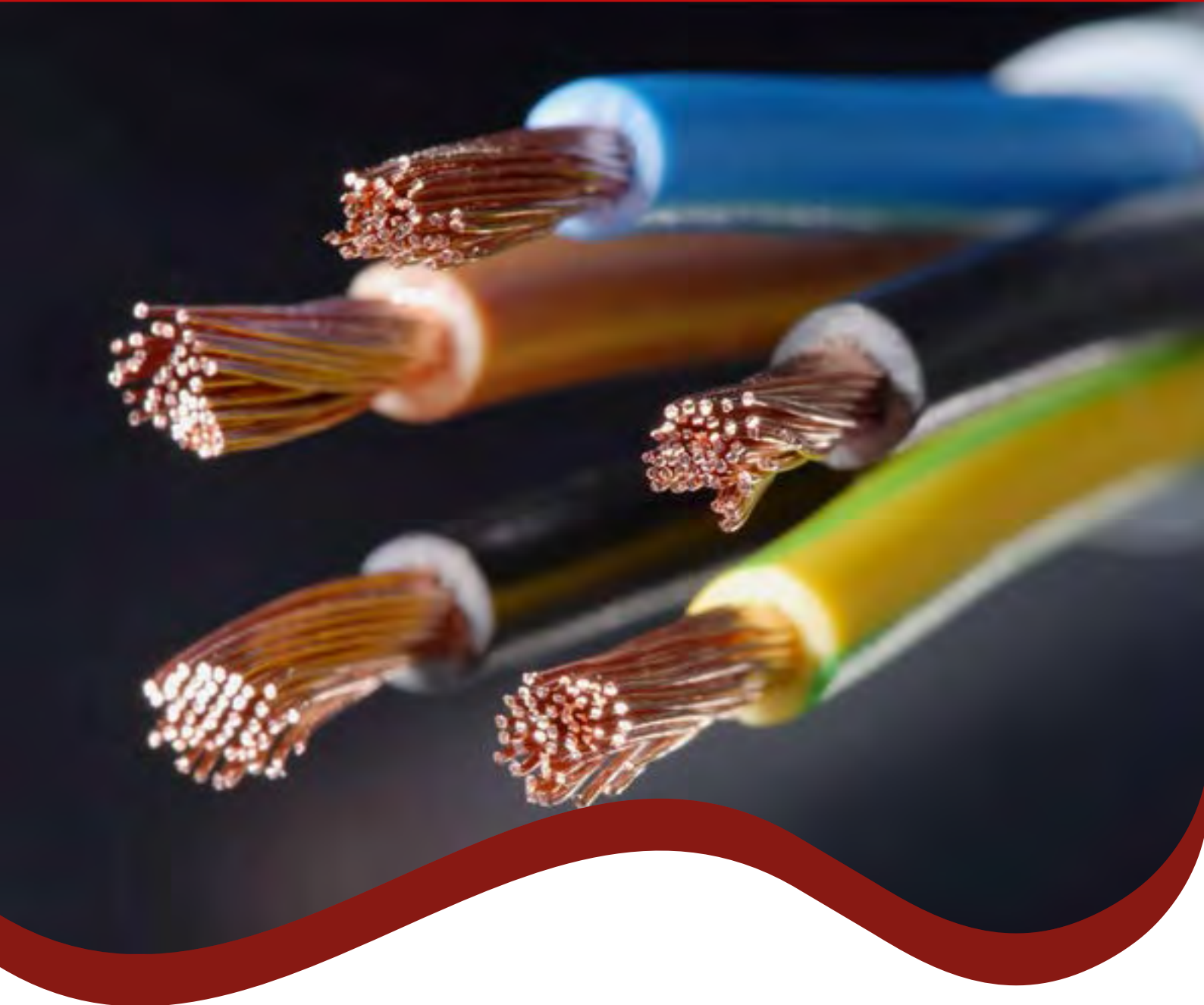
Note: R Minimum Permissible bending radius of cable.

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

**"WE SUPPLY
WORLDWIDE"**







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