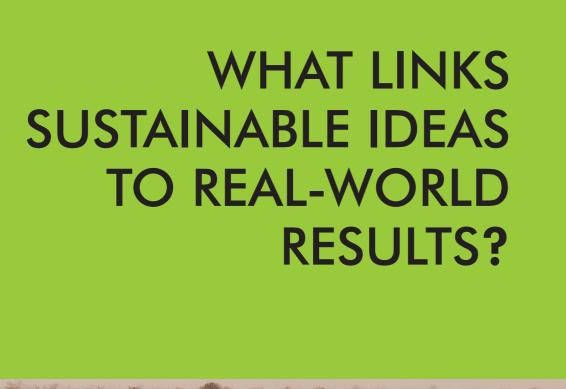


Advanced Cable Solutions for the Solar PV Industry





We offer cable solutions to enable the production and supply of renewable energy.

To meet an ever-growing need for power, the world is increasingly turning to renewable and sustainably sourced solar energy. In response to this demand, Oman Cables are helping businesses in the renewable industry around the globe convert these new opportunities into reality.

Our technologies - which cover cables used in photovoltaic plants - are at work across the renewables sector, supporting the operations of contractors and developers, grid operators, system integrators and panel makers.

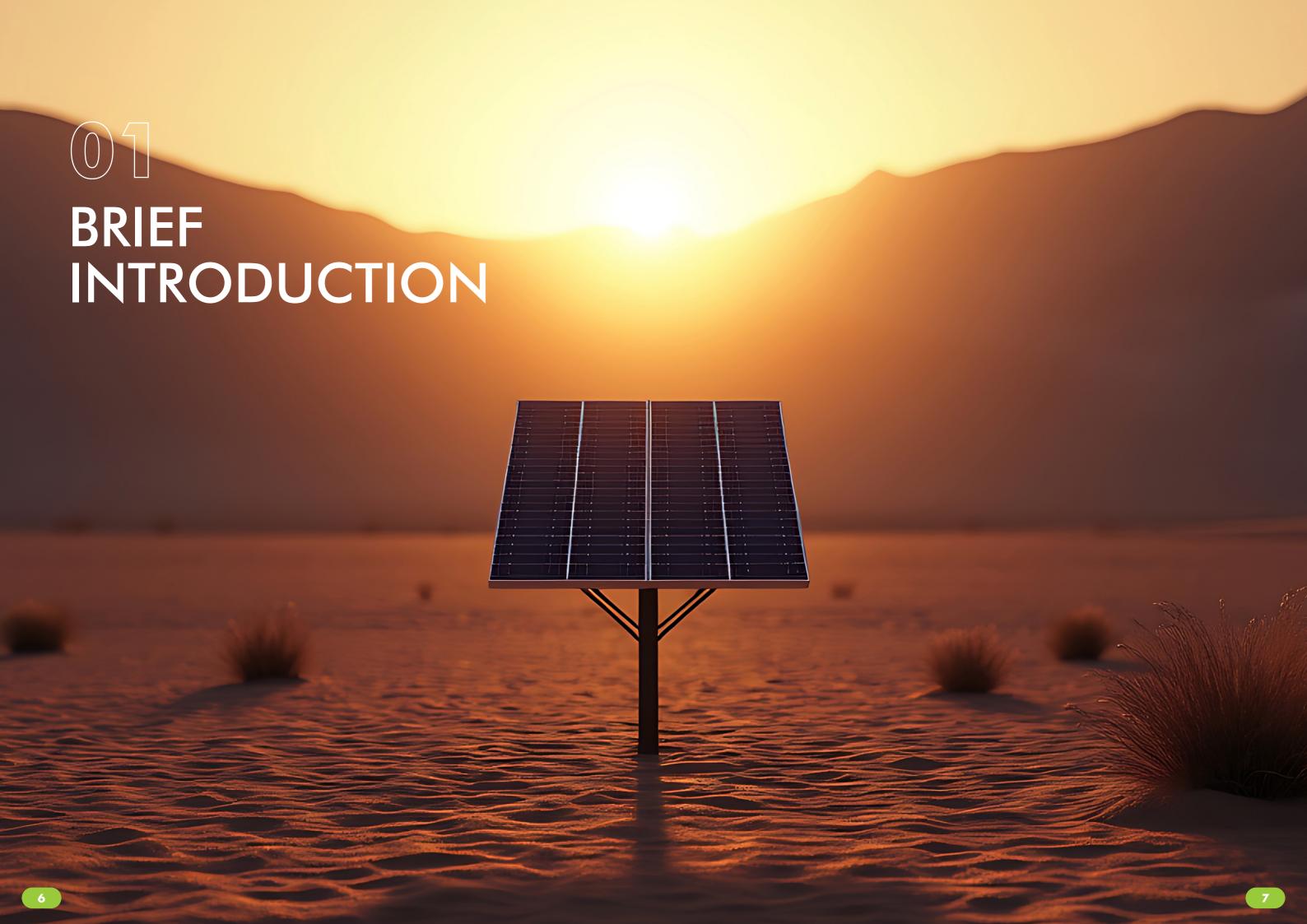
Always aware of our responsibility to the planet, we're constantly driving innovation in our industry, aiming to help renewable industry partners deliver projects with benefits for the future of both our world and their businesses.

Oman Cables range of solar and photovoltaic products are helping businesses around the world convert opportunities stemming from renewable energy sources into reality and answer the world's growing demand for renewable energy. We have supplied components to worldwide developers, grid operators, PV panel makers, PV power generation system integrators and even entire solar parks worldwide.

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Oman Cables Industry (SAOG) develops, manufactures, and markets a totally integrated variety of electrical products, which include medium voltage power cables, low voltage power & control cables, instrumentation cables, pilot cables, overhead power transmission line conductors and building wires.









Experience



400

Countries with industrial Footprint

HISTORY •

OCI was established in 1984 by the former Chairman, Mr. Mustafa Mukhtar Al Lawati and Current Director Mr. Hussain Salman Al Lawati. Oman Cables Industry is a well-known and popular cable manufacturer in Oman with offices in UAE, Qatar, KSA, Asia and Europe. With a network of Agents, Distributors, and personal Sales effort, OCI is well established in Kuwait, Jordan, North African countries, Sub-Sahara Africa and continue to develop new markets.

The manufacturing facilities are situated in Muscat, the capital of the Sultanate of Oman, in the Rusayl Industrial Estate, which is the largest industrial complex in the country. OCI's office buildings and factory presently occupy an expansive area of around 135000 square meters with future expansions planned.

OCI therefore has a capacity of more than 120,000mt a year with its copper and aluminum production combined.

OCI has state state-of -the-art equipment that is amongst the most sophisticated in the cable industry. It has the most modern machinery for various cable manufacturing processes, such as wire drawing, bunching, stranding, extrusion, spooling and rewinding. Among the unique manufacturing facilities at OCI are MV cable manufacturing CCV (Catenary Continuous Vulcanizing) lines supplied by M/s. Maillefer Extrusion OY, Finland, a world leader in CCV technology. It can produce cable from 25 mm² to 1000 mm² of both copper and aluminum with voltage grade up to 33kV. A new state of the art Concentric Stranding machine was installed and commissioned on 17 January 2009. OCI has set up a new Plant for manufacturing of Aluminum Rods and Conductors.



AT OMAN CABLES INDUSTRY SAOG, VALUES ARE THE CORE FOCUS IN DEFINING OUR COMPANY'S DNA. WE ARE COMBINING A CULTURE OF SHARED VALUES IN DIRECTION TOWARDS DEVELOPING PEOPLE & BUSINESS TO SET AN INDUSTRY BENCHMARK.





# OMAN CABLES SOLAR PV CABLES WORLD TOUR •

Did you know that already today there is 150000000 METERS of PV cables installed in the world!

If you laid it all in one line, the cables would reach ABOUT+50 TIMES AROUND EARTH.

Here are some examples where our PV cables were installed during the last two years:

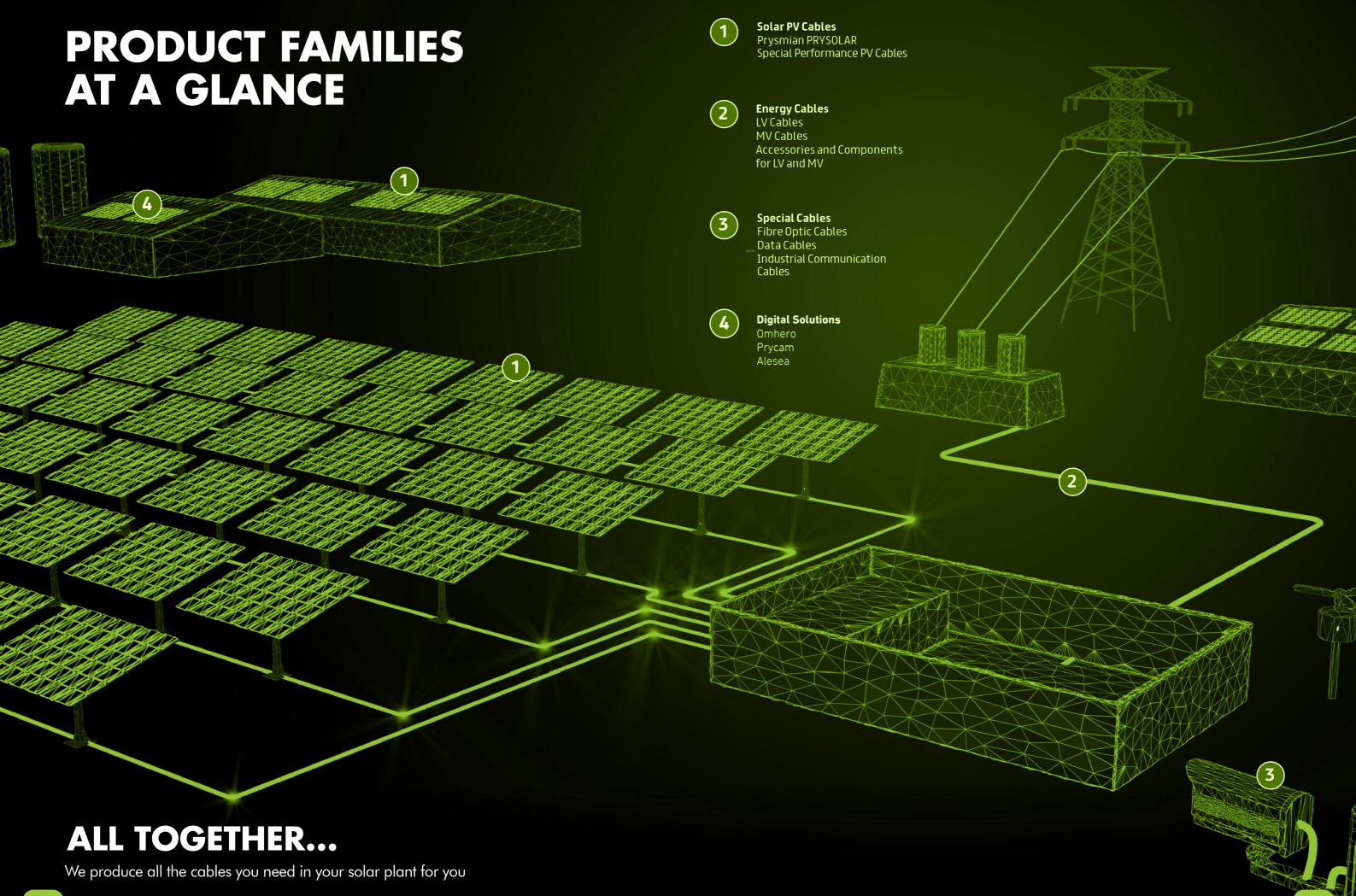
Oman \_\_\_\_\_ 100 MW

UAE \_\_\_\_\_ 500 MW

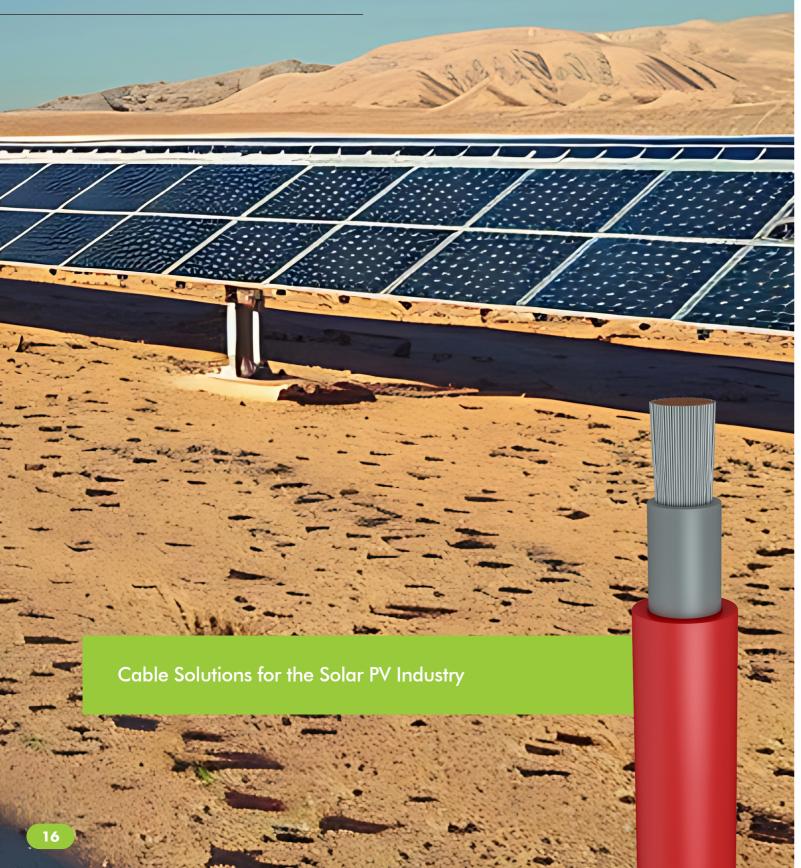
KSA 4000 MW

Qatar \_\_\_\_\_ 900 MW

Italy \_\_\_\_\_ 200 MW



# PRYSMIAN PRYSOLAR BORN TO FACE THE UNPREDICTABLE



#### PRYSMIAN PRYSOLAR I H1Z2Z2-K 1,5/1,5 (1,8) KV DC



#### CONDUCTOR

Flexible tinned copper conductor Class 5 according to IEC 60228

#### INSULATION

Insulation Halogen free cross-linked compound acc. Table B.1 Annex B of IEC 62930 and EN 50618.

#### **OUTER SHEATH**

Halogen free cross-linked compound acc. Table B.1 Annex B of IEC 62930 and EN 50618 Colour: Black or Red



#### EXTREME CLIMATE STRENGTH

Long term immersion in water is a major cause of cable failures. Therefore, we have designed a first-in-the-industry test protocol that certifies long term resistance in water for DC cables.



### RELIABLE RETURN ON INVESTMENT AND 30+ YEARS LIFETIME

A cable with long term water resistance guarantees reliability even in the most unpredictable events. Prysmian PRYSOLAR ensures 30+ years lifetime.



#### SUSTAINABLE SUPPLY CHAIN

With the introduction of Prysmian PRYSOLAR, now Prysmian Group has the most comprehensive production and capability footprint suitable to serve every customer in every continent



#### INCREASED OPERATION EFFICIENCY OF ASSETS

The better a cable withstands operationcritical conditions, the least likely it is to fail. Prysmian PRYSOLAR reliability translates into higher asset efficiency, reduced OPEX and lower Levelized Cost of Energy.

#### TESTED TO OUTPERFORM STANDARD DC CABLES

The Prysmian Group WET-I 1500 testing protocol is the first in the industry to certify long term resistance in water for DC cables.

#### AD8

- Manufacturer self-declaration
- No reference standards
- Ensures that the cable can operate permanently when immersed in water
- Designed for AC up to 450/750 V

#### WET-I 1500

- Prysmian Group proprietary test for long term resistance in water up to 1500 V DC
- Simulation of real conditions that a cable installed in a PV plant can withstand
- Test parameters: 1800 V DC Water @70 °C 1500 cycles

Prysmian PRYSOLAR I Born to face the unpredictable

IEC 62930/EN 50618

insulation resistance

intermittent immersion)

(partial or total

Long term

DC

AD7

## SPECIAL PERFORMANCE **PV CABLES** •

#### RODENT AND TERMITE REPELLENT

Solar cables with special treatment to repel rodent and termite attacks, suitable for installations out in the open without any additional protective conduits.



**UV** resistant UV resistant per IEC 62930 Annex E and EN 0618 Annex E



**LSZH** Low smoke emission per EN IEC 61034-2 Halogen fee per IEC 62821-1 and EN 50525-1 Annex B



temperature -40°C to +90°C





Fire behavior Flame retardant per EN IEC 60332-1-2



**Acid and Alkaline** resistant IEC 62930 Annex B. EN 50618 Annex B"



**Rodent and** retardant

#### **CONDUCTOR**

Flexible tinned copper conductor Class 5 according to IEC 60228.

#### **INSULATION**

Halogen free cross-linked compound according to Table B.1 Annex B of IEC 62930 and EN 50618.

#### **OUTER SHEATH**

Halogen free cross-linked compound according to Table B.1 Annex B of IEC 62930 and EN 50618 with a special rodent and termite repellant additive.

Colour: Black or Red

#### **ARMOURED CABLES**

Solar cables with Aluminium wire armour to provide suitable mechanical protection, suitable for direct burial applications.



**UV** resistant UV resistant per IEC 62930 Annex E and EN 0618 Annex E



Operation temperature -40°C to +90°C



Flexible Flexible tinned copper conductor Class 5 per IEC 60228



Fire behavior Flame retardant per EN IEC 60332-1-2



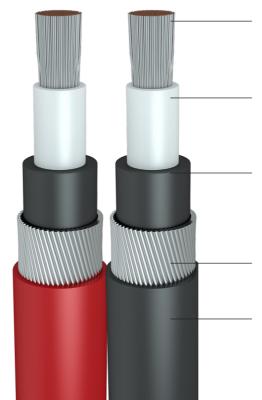
LSZH Low smoke emission per EN IEC 61034-2 Halogen fee per IEC 62821-1 and EN 50525-1 Annex B



**Acid and Alkaline** resistant IEC 62930 Annex B. EN 50618 Annex B"



Mechanical impact medium



#### CONDUCTOR

Flexible tinned copper conductor Class 5 according to IEC 60228

#### INSULATION

Halogen free cross-linked compound acc. TableB.1 Annex B of IEC 62930 and EN 50618.

#### **OUTER SHEATH**

Halogen free cross-linked compound acc. Table B.1 Annex B of IEC 62930 and EN 50618 with a special rodent and termite repellant additive. Colour: Black

#### **ARMOUR**

Round Aluminium wire armour

#### **OUTER SHEATH**

Low Smoke Zero Halogen. Colour: Black or Red

## LOW VOLTAGE CABLES **AC APPLICATION BUILDING WIRES** •

#### **DESCRIPTION AND STANDARD**

CU/PVC 300/500 V BS EN 50525-2-31 CU/PVC 450/700 V BS EN 50525-2-31\*

#### **APPLICATIONS**

Used in control panels and electrical equipment, on and under plaster as laid in conduit.

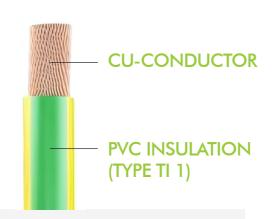
#### CONSTRUCTION

Copper conductor with PVC insulation (Type TI 1).

#### **TECHNICAL DATA**

These cables are produced according to above standards as single core.

- Permissible operating temperature: 70 °C
- Permissible short-circuit temperature: 160 °C



#### CONDUCTOR CLASS







\*When this cable is used in fixed installations with mechanically protected switchgear and control panels, the rated voltage is 600/1000 V.



#### **DESCRIPTION AND STANDARD**

CU/LSZH 300/500 V BS EN 50525-3-41 CU/LSZH 750/450 V BS EN 50525-3-41\*

#### **APPLICATIONS**

Used in control panels and electrical equipment, on and under plaster as laid in conduit.

#### CONSTRUCTION

Copper conductor with LSZH insulation (Type El 5).

#### **TECHNICAL DATA**

These cables are produced according to above standards as single core.

- Permissible operating temperature: 90 °C
- Permissible short-circuit temperature: 250 °C



#### CONDUCTOR CLASS







\*When this cable is used in fixed installations with mechanically protected switchgear and control panels, the rated voltage is 600/1000 V.

# LOW VOLTAGE CABLES AC APPLICATION ARMOURED LV CABLES 1 KV

#### **APPLICATIONS**

These cables are resistant against outer mechanical reactions with their armour of galvanized steel or aluminium wires. They're suitable for heavy operating conditions, laying and installation. They're used in underground and under normal and salty water if specially produced.

#### **DESCRIPTION AND STANDARD**

AL/PVC/AWA or SWA/PVC 0,6/1 kV IEC 60502-1 CU/PVC/AWA or SWA/PVC 0,6/1 kV IEC 60502-1

#### CONSTRUCTION

Single or multi core energy cables with solid, stranded aluminium/copper conductor, PVC insulation with armour of galvanized round steel wires (Aluminium wires for single core cables), and PVC outer sheath.

#### **TECHNICAL DATA**

- Colour of outer sheath: Black (Other colours are available on request).
- Permissible operating temperature: 70 °C
- Permissible short-circuit temperature: 160 °C (For short circuit duration up to 5 sec.)

#### **DESCRIPTION AND STANDARD**

AL/XLPE/AWA or SWA/PVC 0,6/1 kV IEC 60502-1 CU/XLPE/AWA or SWA/PVC 0,6/1 kV IEC 60502-1

#### CONSTRUCTION

Single or multi core energy cables with solid, stranded aluminium/copper conductor, XLPE insulation with armour of galvanized round steel wires (Aluminium wires for single core cables), and PVC outer sheath.

#### **TECHNICAL DATA**

Colour of outer sheath: Black (Other colours are available on request).

- Permissible operating temperature: 90 °C
- Permissible short-circuit temperature: 250 °C (For short circuit duration up to 5 sec.)



- 1. Al- conductor
- 2. PVC/XLPE insulation
- 3. PVC Inner sheath
- 4. Galvanized round aluminium wire armour
- 5. PVC Outer sheath



- 1. Cu- conductor
- 2. PVC/XLPE insulation
- 3. PVC Inner sheath
- 4. Galvanized round aluminium wire armour
- 5. PVC outer sheath

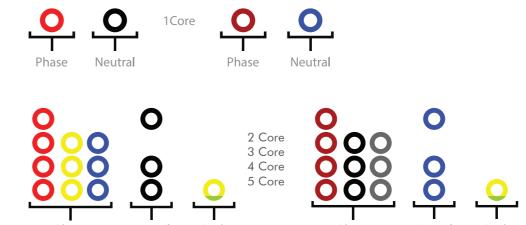


- 1. Al- conductor
- 2. PVC/XLPE insulation
- 3. Filler & binder tape
- 4. PVC Inner sheath
- Galvanized round steel wire armour
- 6. PVC Outer sheath



- 1. Cu- conductor
- 2. PVC/XLPE insulation
- 3. Filler & binder tape
- 4. PVC Inner sheath
- 5. Galvanized round steel wire armour
- 6. PVC outer sheath

#### **CORE COLOUR IDENTIFICATION**



\*Inner and outer sheath are also available in different materials: FRLS-PVC, PE or LSZH

# LOW VOLTAGE CABLES ACAPPLICATION AIRBAG™ LV CABLES 1 KV•

#### **APPLICATIONS**

These cables absorb kinetic energy of a shock by its deformation. AIR BAG™ cables are much lighter, flexible, and easy to install than a traditional armored cable. They're suitable for heavy operating conditions, laying and installation. They're used in underground and under normal and salty water if specially produced.

#### **DESCRIPTION AND STANDARD**

AL/PVC/AIRBAG™/PVC 0.6/1 kV IEC 60502-1 CU/PVC/AIRBAG™/PVC 0.6/1 kV IEC 60502-1

#### CONSTRUCTION

Single or multi core energy cables with solid, stranded aluminium/copper conductor, PVC insulation with AIRBAG™® protection layer and PVC outer sheath.

#### **TECHNICAL DATA**

- Colour of outer sheath: Black (Other colours are available on request).
- Permissible operating temperature: 70 °C
- Permissible short-circuit temperature: 160 °C

(For short circuit duration up to 5 sec.)

#### DESCRIPTION AND STANDARD

AL/XLPE/AIRBAG™/PVC 0.6/1 kV IEC 60502-1 CU/XLPE/AIRBAG™/PVC 0.6/1 kV IEC 60502-1

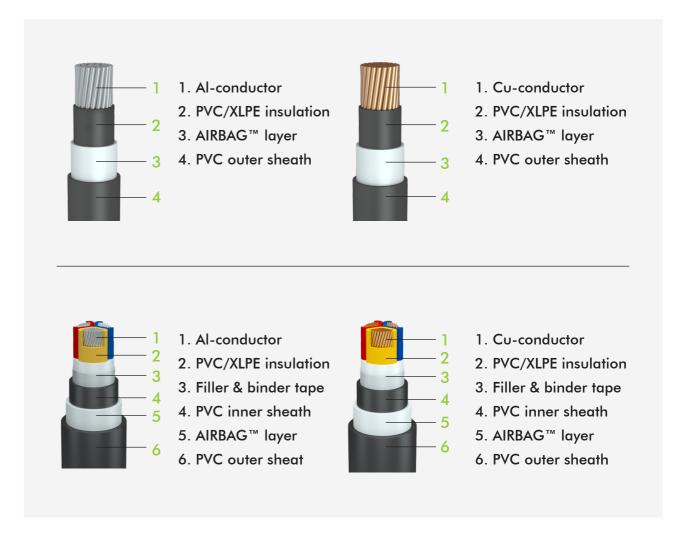
#### CONSTRUCTION

Single or multi core energy cables with solid, stranded aluminium/copper conductor, XLPE insulation with AIRBAG™® protection layer and PVC outer sheath.

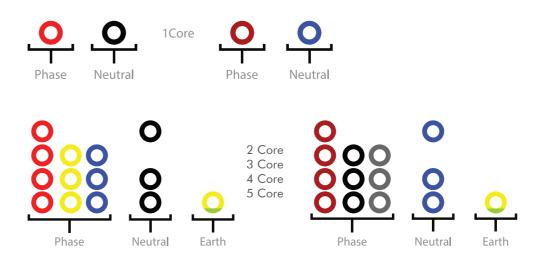
#### **TECHNICAL DATA**

- Colour of outer sheath: Black (Other colours are available on request).
- Permissible operating temperature: 90 °C
- Permissible short-circuit temperature: 250 °C

(For short circuit duration up to 5 sec.)



#### **CORE COLOUR IDENTIFICATION**



\*Inner and outer sheath are also available in different materials: FRLS-PVC, PE or LSZH

## LOW VOLTAGE CABLES DC APPLICATION ARMOURED LV CABLES 3 KV

#### **APPLICATIONS**

These cables are resistant against outer mechanical reactions with their armour of galvanized steel or aluminium wires. They're suitable for heavy operating conditions, laying and installation. They're used in underground and under normal and salty water if specially produced.

#### **DESCRIPTION AND STANDARD**

AL/PVC/AWA or SWA/PVC 3 kV IEC 60502-1 CU/PVC/AWA or SWA/PVC 3 kV IEC 60502-1

#### CONSTRUCTION

Single or multi core energy cables with solid, stranded aluminium/copper conductor, PVC insulation, with armour of galvanized round steel wires (Aluminium wires for single core cables, and PVC outer sheath.

#### **TECHNICAL DATA**

- Colour of outer sheath: Black (Other colours are available on request).
- Permissible operating temperature: 70 °C
- Permissible short-circuit temperature: 160 °C (For short circuit duration up to 5 sec.)

#### **DESCRIPTION AND STANDARD**

AL/XLPE/AWA or SWA/PVC 3 kV IEC 60502-1 CU/XLPE/AWA or SWA/PVC 3 kV IEC 60502-1

#### CONSTRUCTION

Single or multi core energy cables with solid, stranded aluminium/copper conductor, XLPE insulation, with armour of galvanized round steel wires (Aluminium wires for single core cables, and PVC outer sheath.

#### **TECHNICAL DATA**

Colour of outer sheath: Black (Other colours are available on request).

- Permissible operating temperature: 90 °C
- Permissible short-circuit temperature: 250 °C

(For short circuit duration up to 5 sec.)



- 1. Al- conductor
- 2. PVC/XLPE insulation
- 3. PVC Inner sheath
- 4. Galvanized round aluminium wire armour
- 5. PVC Outer sheath



- 1. Cu- conductor
- 2. PVC/XLPE insulation
- 3. PVC Inner sheath
- 4. Galvanized round aluminium wire armour
- 5. PVC outer sheath



- 1. Al- conductor
- 2. PVC/XLPE insulation
- 3. Filler & binder tape
- 4. PVC Inner sheath
- 5. Galvanized round steel wire armour
- 6. PVC Outer sheath



- 1. Cu- conductor
- 2. PVC/XLPE insulation
- 3. Filler & binder tape
- 4. PVC Inner sheath
- 5. Galvanized round steel wire armour
- 6. PVC outer sheath

#### CORE COLOUR IDENTIFICATION









#### **CORE COLOUR IDENTIFICATION**







<sup>\*</sup>Inner and outer sheath are also available in different materials: FRLS-PVC, PE or LSZH

# LOW VOLTAGE CABLES DC APPLICATION AIRBAG™ LV CABLES 3 KV•

#### **APPLICATIONS**

These cables absorb kinetic energy of a shock by its deformation and suitable for heavy operating conditions, laying and installation. Used generally for city utilities, street lightings, household appliances, underground and under normal and salty water if specially produced.

#### **DESCRIPTION AND STANDARD**

AL/PVC/AIRBAG™/PVC 3 kV IEC 60502-1 CU/PVC/AIRBAG™/PVC 3 kV IEC 60502-1

#### CONSTRUCTION

Single or multi core energy cables with solid, stranded aluminium/copper conductor, PVC insulation with AIRBAG™® protection layer and PVC outer sheath.

#### **TECHNICAL DATA**

Colour of outer sheath: Black (Other colours are available on request).

- Permissible operating temperature: 70 °C
- Permissible short-circuit temperature: 160 °C

(For short circuit duration up to 5 sec.)

#### **DESCRIPTION AND STANDARD**

AL/XLPE/AIRBAG™/PVC 3 kV IEC 60502-1 CU/XLPE/AIRBAG™/PVC 3 kV IEC 60502-1

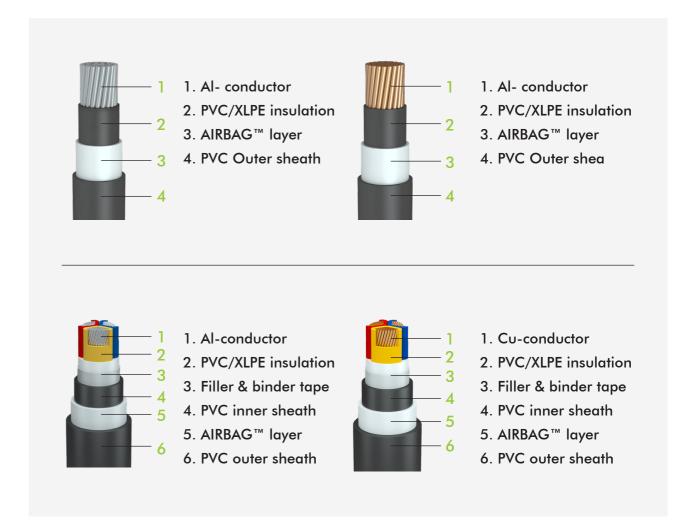
#### CONSTRUCTION

Single or multi core energy cables with solid, stranded aluminium/copper conductor, XLPE insulation with AIRBAG™® protection layer and PVC outer sheath.

#### **TECHNICAL DATA**

- Colour of outer sheath: Black (Other colours are available on request).
- Permissible operating temperature: 90 °C
- Permissible short-circuit temperature: 250  $\,^{\circ}\text{C}$

(For short circuit duration up to 5 sec.)



#### **CORE COLOUR IDENTIFICATION**



#### **CORE COLOUR IDENTIFICATION**



<sup>\*</sup>Inner and outer sheath are also available in different materials: FRLS-PVC, PE or LSZH

# MEDIUM VOLTAGE CABLES – ARMOURED •

#### **APPLICATIONS**

These cables have very low electrical loss compared to their similar and they are used in cable ducts, outdoor and indoor installations, underground where the short circuit levels are high such as urban and industrial areas fed by electrical energy. They are also used under normal and salty water if specially produced.

#### **DESCRIPTION AND STANDARD**

AL/XLPE/SCR/ARMOUR/PVC 18/30 kV or 20,3/35 kV CU/XLPE/SCR/ARMOUR/PVC 18/30 kV or 20,3/35 kV

#### CONSTRUCTION

Single core medium voltage energy cables with stranded aluminium/copper conductors, XLPE insulation, special inner and outer semi-conductive layers on conductors and insulation, metallic screen on each core, armour and (PVC) outer sheath.

#### **TECHNICAL DATA**

These cables are produced according to IEC 60502-2.

- Metallic Screen Material: Copper Tape (CUT) or Copper Wires (CWS).
- Armour Material: Double Aluminium Tape or Round Aluminium Wire Armour.
- Colour of outer sheath: Red or Black (Special colours are available on request).
- Permissible operating temperature: 90 °C
- Permissible short-circuit temperature: 250 °C (For short circuit duration up to 5 sec.)

#### **DESCRIPTION AND STANDARD**

AL/XLPE/SCR/ARMOUR/PVC 18/30 kV or 20,3/35 kV CU/XLPE/SCR/ARMOUR/PVC 18/30 kV or 20,3/35 kV

#### CONSTRUCTION

Three-core medium voltage energy cables with Alumin copper conductors, XLPE insulation, special inner and outer semi-conductive layers on conductors and insulation, metallic screen on each core, armour and (PVC) outer sheath.

#### **TECHNICAL DATA**

These cables are produced according to IEC 60502-2.

- Metallic Screen Material: Copper Tape (CUT) or Copper Wires (CWS).
- Armour Material: Galvanized double Steel Tape or Galvanized round Steel Wire Armour
- Colour of outer sheath: Red or Black (Special colours are available on request).
- Permissible operating temperature: 90 °C
- Permissible short-circuit temperature: 250 °C (For short circuit duration up to 5 sec.)



- 1. Al-conductor
- 2. Semi-conducting conductor screen
- 3. XLPE insulation
- 4. Semi-conducting insulation screen
- 5. Copper wires screen
- 6. PVC inner sheath
- 7. Aluminium Wire Armour
- 8. PVC outer sheath



- 1. Cu-conductor
- 2. Semi-conducting conductor screen
- 3. XLPE insulation
- 4. Semi-conducting insulation screen
- 5. Copper tape screen
- 6. PVC inner sheath
- 7. Double Aluminium
  Tape armour
- 8. PVC outer sheath



- 1. Cu-conductor
- 2. Semi-conducting conductor screen
- 3. XLPE insulation
- 4. Semi-conducting insulation screen
- 5. Copper wires screen
- 6. Filler & binder tape
- 7. PVC inner sheath
- 8. Galvanized round steel wire armour
- 9. PVC outer sheath



- 1. Cu-conductor
- 2. Semi-conducting conductor screen
- 3. XLPE insulation
- 4. Semi-conducting insulation screen
- 5. Copper tape screen
- 6. Filler & binder tape
- 7. PVC inner sheath
- 8. Galvanized double steel tape armour
- 9. PVC outer sheath

#### **CORE COLOUR IDENTIFICATION**



#### CORE COLOUR IDENTIFICATION



3 Core



\*Inner and outer sheath are also available in different materials: FRLS-PVC, PE or LSZH

# MEDIUM VOLTAGE CABLES – AIRBAG™ •

#### **APPLICATIONS**

These cables have very low electrical loss compared to their similar and they are used in cable ducts, outdoor and indoor installations, underground where the short circuit levels are high such as urban and industrial areas fed by electrical energy. They are also used under normal and salty water if specially produced.

#### **DESCRIPTION AND STANDARD**

AL/XLPE/SCR/AIRBAG™/PVC 18/30 kV or 20,3/35 kV CU/XLPE/SCR/AIRBAG™/PVC 18/30 kV or 20,3/35 kV

#### CONSTRUCTION

Single core medium voltage energy cables with stranded aluminium/copper conductors, XLPE insulation, special inner and outer semi-conductive layers on conductors and insulation, metallic screen, AIRBAG™ protection layer and (PVC) outer sheath.

#### **TECHNICAL DATA**

These cables are produced according to IEC 60502-2.

- Metallic Screen Material: Copper Tape (CUT) or Copper Wires (CWS).
- Colour of outer sheath: Red or Black (Special colours are available onrequest).
- Permissible operating temperature: 90 °C
- Permissible short-circuit temperature: 250 °C

#### **DESCRIPTION AND STANDARD**

AL/XLPE/SCR/AIRBAG™/PVC 18/30 kV or 20,3/35 kV CU/XLPE/SCR/AIRBAG™/PVC 18/30 kV or 20,3/35 kV

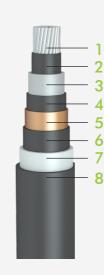
#### **CONSTRUCTION**

Three-core medium voltage energy cables with stranded aluminium/copper conductors, XLPE insulation, special inner and outer semi-conductive layers on conductors and insulation, metallic screen on each core, AIRBAG™ protection layer and PVC outer sheath.

#### **TECHNICAL DATA**

These cables are produced according to IEC 60502-2.

- Metallic Screen Material: Copper Tape (CUT) or Copper Wires (CWS).
- Colour of outer sheath: Red or Black (Special colours are available on request).
- Permissible operating temperature: 90 °C
- Permissible short-circuit temperature: 250 °C (For short circuit duration up to 5 sec.)



- 1. Al-conductor
- 2. Semi-conducting conductor screen
- 3. XLPE insulation
- 4. Semi-conducting insulation screen
- 5. Copper tape screen
- 6. PVC inner sheath
- 7. AIRBAG™ layer
- 8. PVC outer sheath



- 1. Cu-conductor
- 2. Semi-conducting conductor screen
- 3. XLPE insulation
- 4. Semi-conducting insulation screen
- 5. Copper tape screen
- 6. PVC inner sheath
- 7. AIRBAG™ layer
- 8. PVC outer sheath

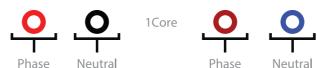


- 1. Al-conductor
- 2. Semi-conducting conductor screen
- 3. XLPE insulation
- 4. Semi-conducting insulation screen
- 5. Copper wires screen
- 6. Filler & binder tape
- 7. PVC inner sheath
- 8. AIRBAG™ layer
- 9. PVC outer sheath



- 1. Cu-conductor
- 2. Semi-conducting conductor screen
- 3. XLPE insulation
- 4. Semi-conducting insulation screen
- 5. Copper wires screen
- 6. Filler & binder tape
- 7. PVC inner sheath
- 8. AIRBAG™ layer
- 9. PVC outer sheath

#### **CORE COLOUR IDENTIFICATION**



#### **CORE COLOUR IDENTIFICATION**



3 Core



<sup>\*</sup>Inner and outer sheath are also available in different materials: FRLS-PVC, PE or LSZH

# SPECIAL CABLES – FIBER OPTIC AND DATA •

#### **FIBER OPTIC CABLES**

#### **APPLICATIONS**

This central loose tube armoured optical cable is designed for outdoor installation in duct or direct buried.

#### FTL1 GF5E CONSTRUCTION

The central loose tube is supported with waterproof thermoplastic material, tension strength is increased by glass yam material. Longitudinally copolymer material coated corrugated steel tape armoured with black coloured PE outer sheath .

#### **TECHNICAL DATA**

Temperature for stationary condition: -25 °C, +70 °C Temperature for moving condition: -10 °C, +50 °C

#### A-DF(ZN)(SR)2Y CONSTRUCTION

Thermoplastic multi-tubes, the tubes are twisted around of a center element by the SZ method, filled with waterproof material, tension strength is increased by glass yarn material, copolymer material coated longitudinally corrugated steel tape armored, with black colored PE outer sheath.

#### **TECHNICAL DATA**

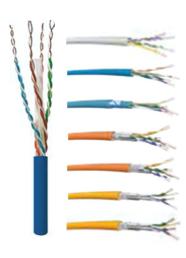
Temperature for stationary condition: -30 °C, +70 °C Temperature for moving condition: -10 °C, +50 °C

#### **DATA CABLES – CATEGORY TYPE CABLES**

#### **APPLICATIONS**

These cables are used for carrying digital and analog voice, data and video signals.

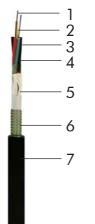
PVC, LSZH, LSZH-FR,PE, armoured, unarmoured versions are available.





- 1. Fiber
- 2. Central loose tube
- 3. Dielectric reinforcement material
- 4. Copolymer corrugated steel armour
- 5. Black PE sheath

Fiber	SM652D	ОМ1	OM2	ОМЗ
4	<b>√</b>	✓	<b>√</b>	<b>√</b>
6	<b>√</b>	✓	✓	✓
8	✓	✓	✓	<b>√</b>
10	<b>√</b>	✓	✓	✓
12	<b>√</b>	✓	✓	✓
16	<b>√</b>	✓	✓	✓
24	✓	✓	✓	<b>√</b>



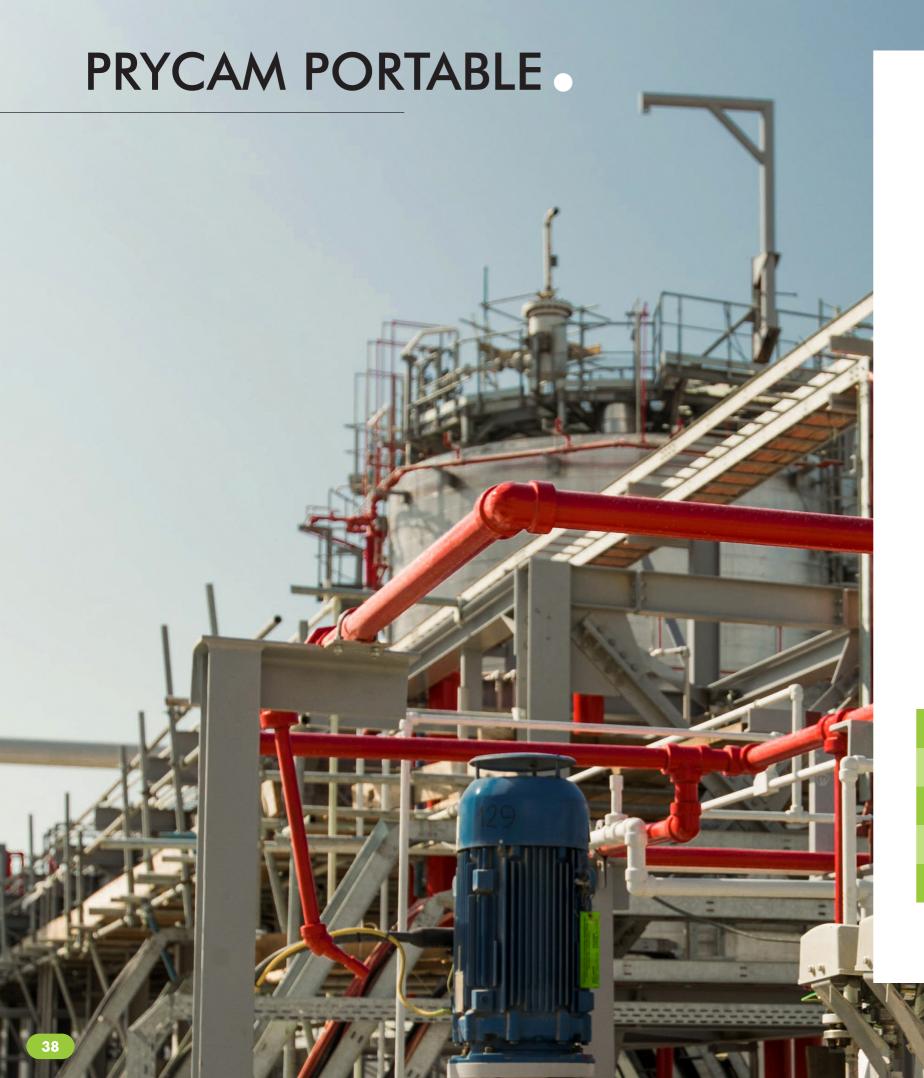
- 1. Fiber
- 2. FRP central strength member
- 3. Thermoplastic tube
- 4. Filling material
- 5. Peripheral reinforcement material
- 6. Copolymer corrugated steel armour
- 7. Black PE sheath

Fiber	SM652D	OM1	OM2	ОМЗ
24	<b>√</b>	✓	<b>√</b>	<b>√</b>
36	<b>√</b>	✓	✓	✓
48	<b>√</b>	✓	✓	✓
60	✓	✓	<b>√</b>	✓
72	✓	✓	✓	✓
96	✓	✓	<b>√</b>	<b>√</b>
144	✓	✓	✓	<b>√</b>

TYPES	FREQUENCY MHZ	EN 50173	ISO/IEC 11801 2 ED
UC 300	100	Cat 5e Class D	Cat 5e Class D
UC 400	250	Cat 6 Class E	Cat 6 Class E
UC 500	500	Cat 6 <sub>A</sub> Class E <sub>A</sub>	Cat 6 <sub>A</sub> Class E <sub>A</sub>
UC 900	600	Cat 7 Class F	Cat 7 Class F
UC 1200	1200	Cat 7 Class F <sub>A</sub>	Cat 7 Class F <sub>A</sub>
UC 1500	1200	Cat 7 Class F <sub>A</sub>	Cat 7 Class F <sub>A</sub>
UC multimedia	1500	MULTIMEDIA	MULTIMEDIA

# ACCESSORIES •

PRODUCT CATEGORY	DESCRIPTION	VOLTAGE GRADE	USES AND APPLICABLE STANDARDS	
JOINTS	Elastic straight through joint with mechanical connector	MV up to 18/30 (36) kV	For single core polymeric cables Generally, meets the requirements of IEEE 404 – CENELEC HD 629.1 S2 IEC 60502-4 – EDF HN33E03 Mechanical connector: IEC 61238-1 class A, HN 68-S-91	elaspeed
TERMINATIONS	Indoor single core & 3 core termination- ELTI-1C ELTI-3C	MV up to 18/30 (36) kV	For polymeric cables - Slip-on termination - Modular type C 33-001 - HD 629-1 - IEC 60502- 4 - ANSI/IEEE 48	elasticfit
	Indoor single core & 3 core termination- CDTI-1C CDTI-3C	MV up to 18/30 (36) kV	For polymeric cables -Coldfit termination with & w/o mechanical lugs. Generally meets the requirements of CENELEC HD 629.1S2-IEEE 48-IEC 60502-4	Coldfit®
	Outdoorsingle core & 3 core termination- ELTO-1C ELTO-3C	MV up to 18/30 (36) kV	For polymeric cables - Slip-on termination - Modular type C 33-001 - HD 629-1 - IEC 60502- 4 - NF C 33-052-IEEE 48	elasticfit
	Outdoor single core & 3 core termination- CDT0-1C CDTO-3C	MV up to 18/30 (36) kV	For polymeric cables -Coldfit termination with & w/o mechanical lugs. Generally meets the requirements of CENELEC HD 629.1S2-IEEE 48 – IEC 60502-4	Coldfit®
CONNECTORS	Separable tee connector (up to 630 mm²) (Interface C / 630A)	MV up to 18/30 (36) kV	For polymeric cables - Deadbreak - Operation Generally meets the requirement of C 33-001 - C 33-051 - HD 629.1S2 - IEC 60502-4. Interface GENELEC EN 50180 - EN 50181	formfit*
	Separable Tee & Compact Tee connector with mechanical conductor contact up to 240mm2 (interface C / 630 A)	MV up to 18/30 (36) kV	For polymeric cables – Deadbreak operation Generally, meets the requirements of C 33-051 - CENELEC HD 629.1 S2 – IEC 60502-4. Interfaces: CENELEC EN 50180 – EN 50181, Mechanical conductor contact: IEC 61238-1 class A	elasco <sub>®</sub>



#### INNOVATIVE SOLUTIONS TO REAL-WORLD CHALLENGES

PD measurement is a key parameter to assess the conditions of any electrical system. Nevertheless, PD testing has never been widely used as a powerful online diagnostic tool due to several limitations of traditional PD technologies, which are usually complex, expensive, unscalable to the whole asset, and nearly impossible to integrate with all key asset parameters. In addition, defect detection and localization can't always be performed online.

#### THE PRY-CAM ANSWER

PRY-CAM's breakthrough wireless technology allows online, accurate and reliable PD measurements, diagnosis and defect localization.

PRY-CAM allows PD testing to be performed online – i.e. without having to switch the system off – and without the need for a direct connection to what is being tested, which also means greater safety for operators.

PRY-CAM is faster, more data-driven and more effective than ever before, solving problems today and delivering learning for tomorrow.

#### **APPLICATIONS**

Suitable for any electrical equipment from 3kV to 600kV. Suitable for cable systems (cables, joints, terminations), GIS, switchgear, transformers, and electrical machines (motors, generators, turbines, etc.) Suitable for AC and DC.

Use on HV an	TO DETECT	
CABLES	SWITCHGEAR	TO MONITOR
JOINTS	TRANSFORMERS	
TERMINATIONS	ELECTRICAL MACHINES	TO LOCALISE
		TO PREVENT

# Maximum safety for operators Very high sampling rate and advanced filtering capabilities PD measurement outcome with pattern, waveform (Time Domain Analysis) and frequency spectrum (Frequency Domain Analysis)

Patented Ultra Wide Band (UWB) capacitive probe sensor

Enhanced noise rejection

High sensitivity and directivity





## **KEY FEATURES**



NO GALVANIC CONNECTION



WIRELESS DATA TRANSMISSION



USER-FRIENDLY MOBILE APPLICATION



LIGHTWEIGHT AND EASY TO CARRY



AUTOMATIC A.I.
DIAGNOSIS

PRY-CAM PORTABLE is an integrated portable instrument for the automatic acquisition, processing and classification of pulse signals generated by PD phenomena occurring in insulating materials of Medium and High Voltage electrical systems and equipment, such as transformers, electrical machines, cables systems and switchgear.

t provides an instant snapshot of the condition of the object being monitored, that is easy and immediate to read thanks to a red-yellow-green traffic-light-like visual interface.

Automatic pre-diagnosis is based on the PRY-CAM BRAIN artificial intelligence algorithm.

Wireless data transmission paired with the absence of galvanic connections ensure maximum safety for operators

# WHY PRY-CAM PORTABLE IS GOOD FOR YOUR BUSINESS



100% successful diagnosis on HV and MV

80% measurement time saved against traditional technologies.

Up to 5x higher sensitivity on small defects.

One device for all types of equipment and all voltage classes. Cost saving generated by online (system in operation) measurement.

Easy to use – training available.

Reliable remote diagnosis by PD expert on demand

## BUILDING SUSTAINABLE GROWTH •

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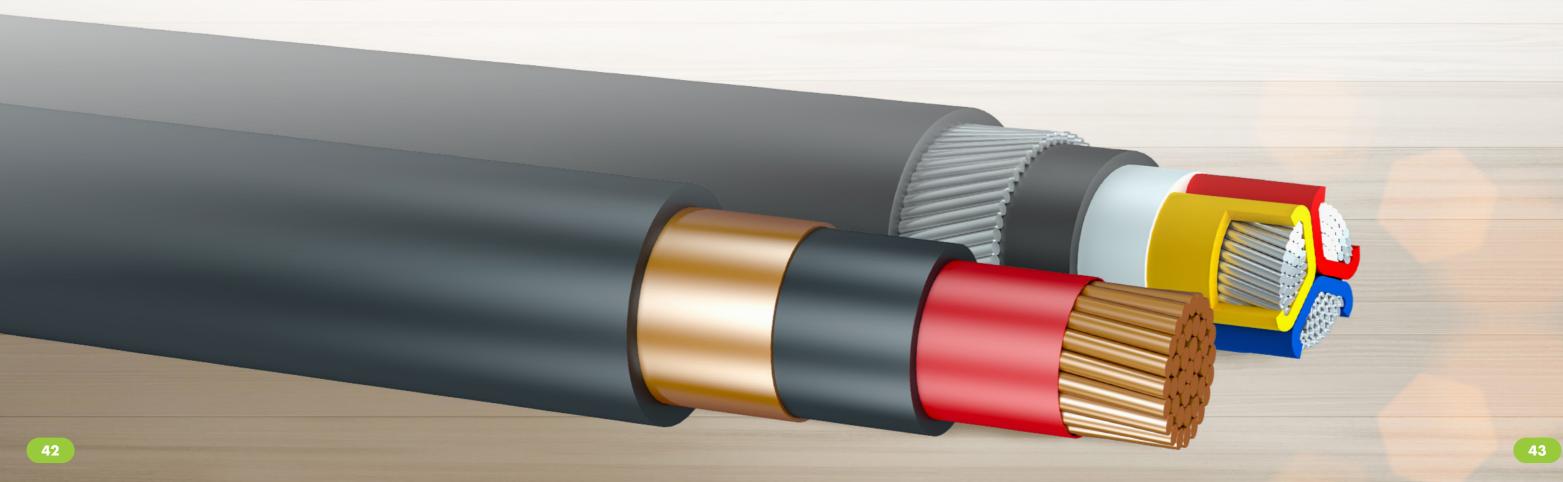
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