



**INSTRUMENTATION
CABLES**



**FIRE RESISTANT
CABLES**

FORELIND[®]
Special Electrical Cables

For.El.Ind. Spa was born in 1982 for the supplying of industrial special electrical cables; during the years it has specialized in the following fields: petrol-chemical, chemical, chemical pharmaceutical and industrial automation.

Thanks to its constant research of quality and service it has become a reference point in the Italian market.

SUPPLYING PROGRAM:

- ELECTRICAL ARMOURED CABLES
- OPTICAL FIBER CABLES
- INSTRUMENTATION ELECTRICAL CABLES
- FIRE RESISTANT CABLES (750°C, 950°C, 1100°C)
- CABLES ACCORDING TO CUSTOMER'S SPECIFICATIONS

FORELIND®
Special Electrical Cables

INSTRUMENTATION CABLES



MULTIPAIR CABLES WITH OVERALL SCREEN

ACCORDING TO BS-VDE-CEI-UNEL

DESIGN	
CONDUCTOR	Stranded (class2) or flexible (class 5) copper conductors according to BS EN 60228
INSULATION	<ul style="list-style-type: none"> • PVC • XLPE (E4) • LSZH EPR (G10)
OVERALL SCREEN	Aluminium/polyester tape with tinned copper drain wire
OUTER SHEATH	<ul style="list-style-type: none"> • PVC • LSZH thermoplastic compound (M1)
STANDARS	These cables are flame retardant according to IEC 60332, CEI 20-22, etc. and can be manufactured in compliance with the most important international standards or with customer's specifications



MULTIPAIR CABLES WITH INDIVIDUAL AND OVERALL SCREEN

ACCORDING TO BS-VDE-CEI-UNEL



DESIGN	
CONDUCTOR	Stranded (class2) or flexible (class 5) copper conductors according to BS EN 60228
INSULATION	<ul style="list-style-type: none"> • PVC • XLPE (E4) • LSZH EPR (G10)
INDIVIDUAL SCREEN	Aluminium/polyester tape with tinned copper drain wire
OVERALL SCREEN	Aluminium/polyester tape with tinned copper drain wire
OUTER SHEATH	<ul style="list-style-type: none"> • PVC • LSZH thermoplastic compound (M1)
STANDARS	These cables are flame retardant according to IEC 60332, CEI 20-22, etc. and can be manufactured in compliance with the most important international standards or with customer's specifications



MULTIPAIR ARMoured CABLES WITH OVERALL SCREEN

ACCORDING TO BS-VDE-CEI-UNEL



DESIGN	
CONDUCTOR	Stranded (class2) or flexible (class 5) copper conductors according to BS EN 60228
INSULATION	<ul style="list-style-type: none"> • PVC • XLPE (E4) • LSZH EPR (G10)
OVERALL SCREEN	Aluminium/polyester tape with tinned copper drain wire
INNER SHEATH	<ul style="list-style-type: none"> • PVC • LSZH thermoplastic compound (M1)
ARMOUR	<ul style="list-style-type: none"> • Galvanized steel wires • Galvanized steel wire braid, 80% covering • Double galvanized steel tape • Lead sheath
OUTER SHEATH	<ul style="list-style-type: none"> • PVC • LSZH thermoplastic compound (M1)
STANDARS	These cables are flame retardant according to IEC 60332, CEI 20-22, etc. and can be manufactured in compliance with the most important international standards or with customer's specifications



INSTRUMENTATION CABLES



MULTIPAIR ARMoured CABLES WITH INDIVIDUAL AND OVERALL SCREEN

ACCORDING TO BS-VDE-CEI-UNEL

DESIGN	
CONDUCTOR	Stranded (class2) or flexible (class 5) copper conductors according to BS EN 60228
INSULATION	<ul style="list-style-type: none"> PVC XLPE (E4) LSZH EPR (G10)
INDIVIDUAL SCREEN	Aluminium/polyester tape with tinned copper drain wire
OVERALL SCREEN	Aluminium/polyester tape with tinned copper drain wire
INNER SHEATH	<ul style="list-style-type: none"> PVC LSZH thermoplastic compound (M1)
ARMOUR	<ul style="list-style-type: none"> Galvanized steel wires Double galvanized steel tape Galvanized steel wire braid, 80% covering Lead sheath
OUTER SHEATH	<ul style="list-style-type: none"> PVC LSZH thermoplastic compound (M1)
STANDARDS	These cables are flame retardant according to IEC 60332, CEI 20-22, etc. and can be manufactured in compliance with the most important international standards or with customer's specifications



PAIRS OR TRIADS	SIZE mm2	SIZE mm2	SIZE mm2	SIZE mm2	SIZE mm2	SIZE mm2
1x2x.... / 1x3x....	0.5	0.75	1	1.35	1.5	2.5
2x2x.... / 2x3x....	0.5	0.75	1	1.35	1.5	2.5
3x2x.... / 3x3x....	0.5	0.75	1	1.35	1.5	2.5
4x2x.... / 4x3x....	0.5	0.75	1	1.35	1.5	2.5
6x2x.... / 6x3x....	0.5	0.75	1	1.35	1.5	2.5
8x2x.... / 8x3x....	0.5	0.75	1	1.35	1.5	2.5
10x2x.... / 10x3x....	0.5	0.75	1	1.35	1.5	2.5
12x2x.... / 12x3x....	0.5	0.75	1	1.35	1.5	2.5
16x2x.... / 16x3x....	0.5	0.75	1	1.35	1.5	2.5
20x2x.... / 20x3x....	0.5	0.75	1	1.35	1.5	2.5
24x2x.... / 24x3x....	0.5	0.75	1	1.35	1.5	2.5
36x2x.... / 36x3x....	0.5	0.75	1	1.35	1.5	2.5
48x2x.... / 48x3x....	0.5	0.75	1	1.35	1.5	2.5

PAIRS OR TRIADS	SIZE AWG	SIZE AWG	SIZE AWG	SIZE AWG	SIZE AWG	SIZE AWG
1x2x.... / 1x3x....	20/1 or 20/7	18/7	16/7	14/7		
2x2x.... / 2x3x....	20/1 or 20/7	18/7	16/7	14/7		
3x2x.... / 3x3x....	20/1 or 20/7	18/7	16/7	14/7		
4x2x.... / 4x3x....	20/1 or 20/7	18/7	16/7	14/7		
6x2x.... / 6x3x....	20/1 or 20/7	18/7	16/7	14/7		
8x2x.... / 8x3x....	20/1 or 20/7	18/7	16/7	14/7		
10x2x.... / 10x3x....	20/1 or 20/7	18/7	16/7	14/7		
12x2x.... / 12x3x....	20/1 or 20/7	18/7	16/7	14/7		
16x2x.... / 16x3x....	20/1 or 20/7	18/7	16/7	14/7		
20x2x.... / 20x3x....	20/1 or 20/7	18/7	16/7	14/7		
24x2x.... / 24x3x....	20/1 or 20/7	18/7	16/7	14/7		
36x2x.... / 36x3x....	20/1 or 20/7	18/7	16/7	14/7		
48x2x.... / 48x3x....	20/1 or 20/7	18/7	16/7	14/7		

INSTRUMENTATION CABLES

MULTIPAIRS THERMOCOUPLE EXTENSION CABLES WITH OVERALL SCREEN

ACCORDING TO
BS-VDE-IEC-UNEL-DIN-ANSI-CEI



DESIGN	
CONDUCTOR	Solid 0.5 mm ² (20 AWG) or 1.3 mm ² (16AWG)
CALIBRATION	KX, JX, TX, EX, WX, R/SX, BX
INSULATION	<ul style="list-style-type: none"> • PVC • XLPE (E4) • LSZH EPR (G10) • SILICONE RUBBER (G4)
OVERALL SCREEN	Aluminium/polyester tape with tinned copper drain wire
OUTER SHEATH	<ul style="list-style-type: none"> • PVC • LSZH thermoplastic compound (M1) • SILICONE RUBBER (G4)
STANDARS	These cables are flame retardant according to IEC 60332, CEI 20-22, etc. and can be manufactured in compliance with the most important international standards or with customer's specifications



MULTIPAIRS THERMOCOUPLE EXTENSION CABLES WITH INDIVIDUAL AND OVERALL SCREEN

ACCORDING TO
BS-VDE-IEC-UNEL-DIN-ANSI-CEI



DESIGN	
CONDUCTOR	Solid 0.5 mm ² (20 AWG) or 1.3 mm ² (16AWG)
CALIBRATION	KX, JX, TX, EX, WX, R/SX, BX
INSULATION	<ul style="list-style-type: none"> • PVC • XLPE (E4) • LSZH EPR (G10) • SILICONE RUBBER (G4)
INDIVIDUAL SCREEN	Aluminium/polyester tape with tinned copper drain wire
OVERALL SCREEN	Aluminium/polyester tape with tinned copper drain wire
OUTER SHEATH	<ul style="list-style-type: none"> • PVC • LSZH thermoplastic compound (M1) • SILICONE RUBBER (G4)
STANDARS	These cables are flame retardant according to IEC 60332, CEI 20-22, etc. and can be manufactured in compliance with the most important international standards or with customer's specifications



MULTIPAIRS THERMOCOUPLE EXTENSION CABLES ARMoured WITH OVERALL SCREEN

ACCORDING TO
BS-VDE-IEC-UNEL-DIN-ANSI-CEI



DESIGN	
CONDUCTOR	Solid 0.5 mm ² (20 AWG) or 1.3 mm ² (16AWG)
CALIBRATION	KX, JX, TX, EX, WX, R/SX, BX
INSULATION	<ul style="list-style-type: none"> • PVC • XLPE (E4) • LSZH EPR (G10) • SILICONE RUBBER (G4)
OVERALL SCREEN	Aluminium/polyester tape with tinned copper drain wire
INNER SHEATH	<ul style="list-style-type: none"> • PVC • LSZH thermoplastic compound (M1) • SILICONE RUBBER (G4)
ARMOUR	<ul style="list-style-type: none"> • Galvanized steel wires • Double galvanized steel tape • Galvanized steel wire braid, 80% covering • Lead sheath
OUTER SHEATH	<ul style="list-style-type: none"> • PVC • LSZH thermoplastic compound (M1) • SILICONE RUBBER (G4)
STANDARS	These cables are flame retardant according to IEC 60332, CEI 20-22, etc. and can be manufactured in compliance with the most important international standards or with customer's specifications



INSTRUMENTATION CABLES



MULTIPAIRS THERMOCOUPLE EXTENSION CABLES ARMoured WITH INDIVIDUAL AND OVERALL SCREEN

ACCORDING TO BS-VDE-IEC-UNEL-DIN-ANSI-CEI

DESIGN	
CONDUCTOR	Solid 0.5 mm ² (20 AWG) or 1.3 mm ² (16AWG)
CALIBRATION	KX, JX, TX, EX, WX, R/SX, BX
INSULATION	<ul style="list-style-type: none"> • PVC • XLPE (E4) • LSZH EPR (G10) • SILICONE RUBBER (G4)
INDIVIDUAL SCREEN	Aluminium/polyester tape with tinned copper drain wire
OVERALL SCREEN	Aluminium/polyester tape with tinned copper drain wire
INNER SHEATH	<ul style="list-style-type: none"> • PVC • LSZH thermoplastic compound (M1) • SILICONE RUBBER (G4)
ARMOUR	<ul style="list-style-type: none"> • Galvanized steel wires • Double galvanized steel tape • Galvanized steel wire braid, 80% covering • Lead sheath
OUTER SHEATH	<ul style="list-style-type: none"> • PVC • LSZH thermoplastic compound (M1) • SILICONE RUBBER (G4)
STANDARDS	These cables are flame retardant according to IEC 60332, CEI 20-22, etc. and can be manufactured in compliance with the most important international standards or with customer's specifications



PAIRS OR TRIADS	SIZE mm ²	SIZE mm ²
1x2x....	0.5	1.3
2x2x....	0.5	1.3
3x2x....	0.5	1.3
4x2x....	0.5	1.3
6x2x....	0.5	1.3
8x2x....	0.5	1.3
10x2x....	0.5	1.3
12x2x....	0.5	1.3
16x2x....	0.5	1.3
20x2x....	0.5	1.3
24x2x....	0.5	1.3
36x2x....	0.5	1.3
48x2x....	0.5	1.3

PAIRS OR TRIADS	SIZE AWG	SIZE AWG
1x2x....	20	16
2x2x....	20	16
3x2x....	20	16
4x2x....	20	16
6x2x....	20	16
8x2x....	20	16
10x2x....	20	16
12x2x....	20	16
16x2x....	20	16
20x2x....	20	16
24x2x....	20	16
36x2x....	20	16
48x2x....	20	16

FIRE RESISTANT CABLES

CONTROL AND POWER CABLES

ACCORDING TO BS-VDE-CEI-UNEL



DESIGN	
CONDUCTOR	Solid (class 1), stranded (class 2) or flexible (class 5) copper conductors according to BS EN 60228
INSULATION	<ul style="list-style-type: none"> Mica-glass tape, with thickness > 0.10 mm + <ul style="list-style-type: none"> LSZH EPR (G10) XLPE (E4) Silicone rubber (G4)
OUTER SHEATH	LSZH thermoplastic compound (M1)
STANDARS	Reference STANDARDS for circuit integrity : IEC 60331, BS 6387 CWZ, EN 50200, EN 50362, CEI 20-36



CONTROL AND POWER ARMoured CABLES

ACCORDING TO BS-VDE-CEI-UNEL



DESIGN	
CONDUCTOR	Solid (class 1), stranded (class 2) or flexible (class 5) copper conductors according to BS EN 60228
INSULATION	<ul style="list-style-type: none"> Mica-glass tape, with thickness > 0.10 mm + <ul style="list-style-type: none"> LSZH EPR (G10) XLPE (E4) Silicone rubber (G4)
INNER SHEATH	LSZH thermoplastic compound (M1)
ARMOUR	<ul style="list-style-type: none"> Galvanized steel wires Double galvanized steel tape Galvanized steel wire braid, 80% covering Lead sheath
OUTER SHEATH	LSZH thermoplastic compound (M1)
STANDARS	Reference STANDARDS for circuit integrity : IEC 60331, BS 6387 CWZ, EN 50200, EN 50362, CEI 20-36



CONTROL AND POWER SCREENED CABLES

ACCORDING TO BS-VDE-CEI-UNEL



DESIGN	
CONDUCTOR	Solid (class 1), stranded (class 2) or flexible (class 5) copper conductors according to BS EN 60228
INSULATION	<ul style="list-style-type: none"> Mica-glass tape, with thickness > 0.10 mm + <ul style="list-style-type: none"> LSZH EPR (G10) XLPE (E4) Silicone rubber (G4)
OVERALL SCREEN	Aluminium/polyester tape, with tinned copper drain wire
OUTER SHEATH	LSZH thermoplastic compound (M1)
STANDARS	Reference STANDARDS for circuit integrity : IEC 60331, BS 6387 CWZ, EN 50200, EN 50362, CEI 20-36



FIRE RESISTANT CABLES

CONDUCTORS	SIZE mm2		CONDUCTORS	SIZE mm2	
2	1	300/500 V	2	2.5	0.6/1 KV
3	1	300/500 V	3	2.5	0.6/1 KV
4	1	300/500 V	4	2.5	0.6/1 KV
5	1	300/500 V	5	2.5	0.6/1 KV
7	1	300/500 V	7	2.5	0.6/1 KV
12	1	300/500 V	12	2.5	0.6/1 KV
18	1	300/500 V	18	2.5	0.6/1 KV
24	1	300/500 V	24	2.5	0.6/1 KV
36	1	300/500 V	36	2.5	0.6/1 KV
48	1	300/500 V	48	2.5	0.6/1 KV
2	1.5	450/750 V - 0.6/1 KV	2	4	0.6/1 KV
3	1.5	450/750 V - 0.6/1 KV	3	4	0.6/1 KV
4	1.5	450/750 V - 0.6/1 KV	4	4	0.6/1 KV
5	1.5	450/750 V - 0.6/1 KV	5	4	0.6/1 KV
7	1.5	450/750 V - 0.6/1 KV	2	6	0.6/1 KV
12	1.5	450/750 V - 0.6/1 KV	3	6	0.6/1 KV
18	1.5	450/750 V - 0.6/1 KV	4	6	0.6/1 KV
24	1.5	450/750 V - 0.6/1 KV	5	6	0.6/1 KV
36	1.5	450/750 V - 0.6/1 KV	2	10	0.6/1 KV
48	1.5	450/750 V - 0.6/1 KV	3	10	0.6/1 KV
			4	10	0.6/1 KV
			5	10	0.6/1 KV
			2	16	0.6/1 KV
			3	16	0.6/1 KV
			4	16	0.6/1 KV
			5	16	0.6/1 KV



CABLE IN TEST

FIRE RESISTANT CABLES

MULTIPAIR CABLES WITH OVERALL SCREEN

ACCORDING TO BS-VDE-CEI-UNEL



DESIGN	
CONDUCTOR	Solid (class 1), stranded (class 2) or flexible (class 5) copper conductors according to BS EN 60228
INSULATION	<ul style="list-style-type: none"> Mica-glass tape , with thickness > 0.10 mm + <ul style="list-style-type: none"> LSZH EPR (G10) XLPE (E4) Silicone rubber (G4)
OVERALL SCREEN	Aluminium/polyester tape, with tinned copper drain wire
OUTER SHEATH	LSZH thermoplastic compound (M1)
STANDARS	Reference STANDARDS for circuit integrity: IEC 60331, BS 6387 CWZ, EN 50200, EN50362, CEI 20-36



MULTIPAIR CABLES WITH INDIVIDUAL AND OVERALL SCREEN

ACCORDING TO BS-VDE-CEI-UNEL



DESIGN	
CONDUCTOR	Solid (class 1), stranded (class 2) or flexible (class 5) copper conductors according to BS EN 60228
INSULATION	<ul style="list-style-type: none"> Mica-glass tape , with thickness > 0.10 mm + <ul style="list-style-type: none"> LSZH EPR (G10) XLPE (E4) Silicone rubber (G4)
INDIVIDUAL SCREEN	Aluminium/polyester tape, with tinned copper drain wire
OVERALL SCREEN	Aluminium/polyester tape, with tinned copper drain wire
OUTER SHEATH	LSZH thermoplastic compound (M1)
STANDARS	Reference STANDARDS for circuit integrity: IEC 60331, BS 6387 CWZ, EN 50200, EN 50362, CEI 20-36



MULTIPAIR ARMoured CABLES WITH OVERALL SCREEN

ACCORDING TO BS-VDE-CEI-UNEL



DESIGN	
CONDUCTOR	Solid (class 1), stranded (class 2) or flexible (class 5) copper conductors according to BS EN 60228
INSULATION	<ul style="list-style-type: none"> Mica-glass tape , with thickness > 0.10 mm + <ul style="list-style-type: none"> LSZH EPR (G10) XLPE (E4) Silicone rubber (G4)
OVERALL SCREEN	Aluminium/polyester tape, with tinned copper drain wire
INNER SHEATH	LSZH thermoplastic compound (M1)
ARMOUR	<ul style="list-style-type: none"> Galvanized steel wires Double galvanized steel tape Galvanized steel wire braid, 80% covering Lead sheath
OUTER SHEATH	LSZH thermoplastic compound (M1)
STANDARS	Reference STANDARDS for circuit integrity : IEC 60331, BS 6387 CWZ, EN 50200, EN 50362, CEI 20-36



FIRE RESISTANT CABLES



MULTIPAIR ARMoured CABLES WITH INDIVIDUAL AND OVERALL SCREEN

ACCORDING TO BS-VDE-CEI-UNEL

DESIGN	
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INSULATION	<ul style="list-style-type: none"> Mica-glass tape , with thickness > 0.10 mm + <ul style="list-style-type: none"> LSZH EPR (G10) XLPE (E4) Silicone rubber (G4)
INDIVIDUAL SCREEN	Aluminium/polyester tape, with tinned copper drain wire
OVERALL SCREEN	Aluminium/polyester tape, with tinned copper drain wire
INNER SHEATH	LSZH thermoplastic compound (M1)
ARMOUR	<ul style="list-style-type: none"> Galvanized steel wires Double galvanized steel tape Galvanized steel wire braid, 80% covering Lead sheath
OUTER SHEATH	LSZH thermoplastic compound (M1)
STANDARDS	Reference STANDARDS for circuit integrity : IEC 60331, BS 6387 CWZ, EN 50200, EN 50362, CEI 20-36



PAIRS OR TRIADS	SIZE mm2	SIZE mm2	SIZE mm2	SIZE mm2	SIZE mm2	SIZE mm2
1x2x.... / 1x3x....	0.5	0.75	1	1.35	1.5	2.5
2x2x.... / 2x3x....	0.5	0.75	1	1.35	1.5	2.5
3x2x.... / 3x3x....	0.5	0.75	1	1.35	1.5	2.5
4x2x.... / 4x3x....	0.5	0.75	1	1.35	1.5	2.5
6x2x.... / 6x3x....	0.5	0.75	1	1.35	1.5	2.5
8x2x.... / 8x3x....	0.5	0.75	1	1.35	1.5	2.5
10x2x.... / 10x3x....	0.5	0.75	1	1.35	1.5	2.5
12x2x.... / 12x3x....	0.5	0.75	1	1.35	1.5	2.5
16x2x.... / 16x3x....	0.5	0.75	1	1.35	1.5	2.5
20x2x.... / 20x3x....	0.5	0.75	1	1.35	1.5	2.5
24x2x.... / 24x3x....	0.5	0.75	1	1.35	1.5	2.5
36x2x.... / 36x3x....	0.5	0.75	1	1.35	1.5	2.5
48x2x.... / 48x3x....	0.5	0.75	1	1.35	1.5	2.5

PAIRS OR TRIADS	SIZE AWG	SIZE AWG	SIZE AWG	SIZE AWG	SIZE AWG	SIZE AWG
1x2x.... / 1x3x....	20/1 or 20/7	18/7	16/7	14/7		
2x2x.... / 2x3x....	20/1 or 20/7	18/7	16/7	14/7		
3x2x.... / 3x3x....	20/1 or 20/7	18/7	16/7	14/7		
4x2x.... / 4x3x....	20/1 or 20/7	18/7	16/7	14/7		
6x2x.... / 6x3x....	20/1 or 20/7	18/7	16/7	14/7		
8x2x.... / 8x3x....	20/1 or 20/7	18/7	16/7	14/7		
10x2x.... / 10x3x....	20/1 or 20/7	18/7	16/7	14/7		
12x2x.... / 12x3x....	20/1 or 20/7	18/7	16/7	14/7		
16x2x.... / 16x3x....	20/1 or 20/7	18/7	16/7	14/7		
20x2x.... / 20x3x....	20/1 or 20/7	18/7	16/7	14/7		
24x2x.... / 24x3x....	20/1 or 20/7	18/7	16/7	14/7		
36x2x.... / 36x3x....	20/1 or 20/7	18/7	16/7	14/7		
48x2x.... / 48x3x....	20/1 or 20/7	18/7	16/7	14/7		



FORELIND[®]
Special Electrical Cables



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Special Electrical Cables

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