

Table: Technical Data for Distribution Transformer 400 kVA, 20/0.4kV

Manufacturer's Name		To be specified	
Type / Model		Oil-immersed	
Installation		With oil conservator	
Dielectric		outdoor	
Oil type		oil, without PCB	
Rated frequency	Hz	to be specified	
Rated power	kVA	50	
Number of phases		400	
Rated voltage:		3	
- High voltage side	kV	20	
- Low voltage side	kV	0.4	
Taps on HV side	%	$\pm 2 \times 2.5\%$, off load	
Rated currents			
- High voltage side	A	to be specified	
- Low voltage side	A	to be specified	
Impedance voltage	%	4	
Vector group		Dyn5	
Treatment of neutral (LV side)		Solidly earthed	
Losses:			
- No-load	W	To be specified	
- Load	W	To be specified	
Insulation level HV-winding			
Lightning-impulse test voltage	kV	125	
Power-frequency test voltage	kV	50	
Insulation level LV-winding			
Lightning-impulse test voltage	kV	30	
Power-frequency test voltage	kV	10	

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Resistance per phase:			
- HV winding	Ω	to be specified	
- LV winding	Ω	to be specified	
Sound pressure level	dB(A)	52	
Max. temperature rise at 45° C ambient temperature and at full load:			
- Winding	°C	to be specified	
- Iron core	°C	to be specified	
- Oil at top level	°C	to be specified	
Max. ambient temperature	°C	45	
Cooling system		ONAN	
Conductor material			
Insulating material of windings		Copper	
Insulation class		to be specified	
Standard bushings		yes	
Accessories:			
- Dial type contactor thermometer transformer	pcs.	1	
- Oil level indicator	pcs.	1	
- Pocket thermometer	pcs.	1	
- Grounding terminals	pcs.	2	
- Filter pipe	pcs.	1	
- Oil drain plug	pcs.	1	
- Rating plate	pcs.	1	
- Towing eye	pcs.	1	
Weights:			
- to Total specified	kg	to be specified	
- to Oil specified	kg	to be specified	
Dimensions:			
- to Length specified	mm	to be specified	
- to Width specified	mm	to be specified	
- to Height specified	mm	to be specified	
Standards		IEC 60076-7 IEC 60354	

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Table: Technical Data for Distribution Transformer 250 kVA, 20/0.4 kV

Manufacturer's Name		To be specified	
Type / Model		Oil-immersed	
Installation		With oil conservator	
Dielectric		outdoor	
Oil type		oil, without PCB	
Rated frequency	Hz	to be specified	
Rated power	kVA	50	
Number of phases		250	
Rated voltage:		3	
- High voltage side	kV	20	
- Low voltage side	kV	0.4	
Taps on HV side	%	±2x2.5%, off load	
Rated currents			
- High voltage side	A	to be specified	
- Low voltage side	A	to be specified	
Impedance voltage	%	4	
Vector group		Dyn5	
Treatment of neutral (LV side)		Solidly earthed	
Losses:			
- No-load	W	To be specified	
- Load	W	To be specified	
Insulation level HV-winding			
Lightning-impulse test voltage	kV	125	
Power-frequency test voltage	kV	50	
Insulation level LV-winding			
Lightning-impulse test voltage	kV	30	
Power-frequency test voltage	kV	10	

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Resistance per phase:			
- HV winding	Ω	to be specified	
- LV winding	Ω	to be specified	
Sound pressure level	dB(A)	52	
Max. temperature rise at 45° C ambient temperature and at full load:			
- Winding	°C	to be specified	
- Iron core	°C	to be specified	
- Oil at top level	°C	to be specified	
Max. ambient temperature	°C	45	
Cooling system		ONAN	
Conductor material			
Insulating material of windings		Copper	
Insulation class		to be specified	
Standard bushings		yes	
Accessories:			
- Dial type contactor thermometer transformer	pcs.	1	
- Oil level indicator	pcs.	1	
- Pocket thermometer	pcs.	1	
- Grounding terminals	pcs.	2	
- Filter pipe	pcs.	1	
- Oil drain plug	pcs.	1	
- Rating plate	pcs.	1	
- Towing eye	pcs.	1	
Weights:			
- Total	kg	to be specified	
- Oil	kg	to be specified	
Dimensions:			
- Length	mm	to be specified	
- Width	mm	to be specified	
- Height	mm	to be specified	
Standards		IEC 60076-7 IEC 60354	

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Table: Technical Data for Distribution Transformer 160 kVA, 20/0.4 kV

Designation	Unit	Required	Offered
Manufacturer's Name		To be specified	
Type / Model		Oil-immersed	
Installation		With oil conservator outdoor	
Dielectric		oil, without PCB	
Oil type		to be specified	
Rated frequency	Hz	50	
Rated power	kVA	160	
Number of phases		3	
Rated voltage:			
- High voltage side	kV	20	
- Low voltage side	kV	0.4	
Taps on HV side	%	±2x2.5%, off load	
Rated currents			
- High voltage side	A	to be specified	
- Low voltage side	A	to be specified	
Impedance voltage	%	4	
Vector group		Dyn5	
Treatment of neutral (LV side)		Solidly earthed	
Losses:			
- To No-load	W	To be specified	
- To Load	W	To be specified	
Insulation level HV-winding			
Lightning-impulse test voltage	kV	125	
Power-frequency test voltage	kV	50	
Insulation level LV-winding			
Lightning-impulse test voltage	kV	30	
Power-frequency test voltage	kV	10	

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Resistance per phase:			
- HV winding	Ω	to be specified	
- LV winding	Ω	to be specified	
Sound pressure level	dB(A)	52	
Max. temperature rise at 45° C ambient temperature and at full load:			
- Winding	°C	to be specified	
- Iron core	°C	to be specified	
- Oil at top level	°C	to be specified	
Max. ambient temperature	°C	45	
Cooling system		ONAN	
Conductor material			
Insulating material of windings		Copper	
Insulation class		to be specified	
Standard bushings		yes	
Accessories:			
- Dial type contactor thermometer transformer	pcs.	1	
- Oil level indicator	pcs.	1	
- Pocket thermometer	pcs.	1	
- Grounding terminals	pcs.	2	
- Filter pipe	pcs.	1	
- Oil drain plug	pcs.	1	
- Rating plate	pcs.	1	
- Towing eye	pcs.	1	
Weights:			
- to Total	kg	to be specified	
- to Oil	kg	to be specified	
Dimensions:			
- to Length	mm	to be specified	
- to Width	mm	to be specified	
- Height	mm	to be specified	
-			
Standards		IEC 60076-7 IEC 60354	

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Table: Technical Data for Distribution Transformer 100 kVA, 20/0.4 kV

Designation	Unit	Required	Offered
Manufacturer's Name		To be specified	
Type / Model		Oil-immersed With conservator	
Installation		outdoor	
Dielectric		oil, without PCB	
Oil type		to be specified	
Rated frequency	Hz	50	
Rated power	kVA	100	
Number of phases		3	
Rated voltage:			
- High voltage side	kV	20	
- Low voltage side	kV	0.4	
Taps on HV side	%	±2x2.5%, off load	
Rated currents			
- High voltage side	A	to be specified	
- Low voltage side	A	to be specified	
Impedance voltage	%	4	
Vector group		Dyn5	
Treatment of neutral (LV side)		Solidly earthed	
Losses:			
- To No-load	W	To be specified	
- To Load	W	To be specified	
Insulation level HV-winding:			
Lightning-impulse test voltage	kV	125	
Power-frequency test voltage	kV	50	
Insulation level LV-winding:			
Lightning-impulse test voltage	kV	30	
Power-frequency test voltage	kV	10	

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Resistance per phase:			
- HV winding	Ω	to be specified	
- LV winding	Ω	to be specified	
Sound pressure level	dB(A)	52	
Max. temperature rise at 45° C ambient temperature and at full load:			
- Winding	°C	to be specified	
- Iron core	°C	to be specified	
- Oil at top level	°C	to be specified	
Max. ambient temperature	°C	45	
Cooling system		ONAN	
Conductor material			
Insulating material of windings		Copper	
Insulation class		to be specified	
Standard bushings		yes	
Accessories:			
- Dial type contactor thermometer	pcs.	1	
- Oil level indicator	pcs.	1	
- Pocket thermometer	pcs.	1	
- Grounding terminals	pcs.	2	
- Filter pipe	pcs.	1	
- Oil drain plug	pcs.	1	
- Rating plate	pcs.	1	
- Towing eye	pcs.	1	
Weights:			
- Total	kg	to be specified	
- Oil	kg	to be specified	
Dimensions:			
- to Length	mm	to be specified	
- to Width	mm	to be specified	
- to Height	mm	to be specified	
Standards		IEC 60076-7 IEC 60354	

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Table: Technical Data for Distribution Transformer 63 kVA, 20/0.4 kV

Designation	Unit	Required	Offered
Manufacturer's Name		To be specified	
Type / Model		Oil-immersed	
Installation		With conservator	
Dielectric		outdoor	
Oil type		oil, without PCB	
Rated frequency	Hz	to be specified	
Rated power	kVA	50	
Number of phases		63	
Rated voltage:		3	
- High voltage side	kV	20	
- Low voltage side	kV	0.4	
Taps on HV side	%	±2x2.5%, off load	
Rated currents			
- High voltage side	A	to be specified	
- Low voltage side	A	to be specified	
Impedance voltage	%	4	
Vector group		Dyn5	
Treatment of neutral (LV side)		Solidly earthed	
Losses:			
- No-load	W	To be specified	
- Load	W	To be specified	
Insulation level HV-winding:			
Lightning-impulse test voltage	kV	125	
Power-frequency test voltage	kV	50	
Insulation level LV-winding:			
Lightning-impulse test voltage	kV	30	
Power-frequency test voltage	kV	10	

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Resistance per phase:			
- HV winding	Ω	to be specified	
- LV winding	Ω	to be specified	
Sound pressure level	dB(A)	52	
Max. temperature rise at 45° C ambient temperature and at full load:			
- Winding	°C	to be specified	
- Iron core	°C	to be specified	
- Oil at top level	°C	to be specified	
Max. ambient temperature	°C	45	
Cooling system		ONAN	
Conductor material			
Insulating material of windings		Copper	
Insulation class		to be specified	
Standard bushings		yes	
Accessories:			
- Dial type contactor thermometer	pcs.	1	
- Oil level indicator	pcs.	1	
- Pocket thermometer	pcs.	1	
- Grounding terminals	pcs.	2	
- Filter pipe	pcs.	1	
- Oil drain plug	pcs.	1	
- Rating plate	pcs.	1	
- Towing eye	pcs.	1	
Weights:			
- Total	kg	to be specified	
- to Oil specified	kg	to be specified	
Dimensions:			
- to Length specified	mm	to be specified	
- to Width specified	mm	to be specified	
- to Height specified	mm	to be specified	
Standards		IEC 60076-7 IEC 60354	

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Table: Technical Data of 3 Phase Disconnecting Switch

Description	Unit	Required	Offered
Manufacturer's Name		to be specified	
Type / Model		to be specified	
Installation		pole mounted	
Nominal Voltage	kV	20	
Rated Voltage	kV	24	
Rated Frequency	Hz	50	
Rated Normal Current	A	630	
Rated Breaking current			
Rated lightning-impulse withstand voltage	kV	125	
Power frequency test voltage	kV	50	
Rated short-time current	kA	25	
Rated short-circuit making current	kA	63	
Creepage distance for insulators	mm/kV	25	
Distance between phase centers (min)	mm	350	
Operation mechanism		Manual	
All necessary accessories		to be confirmed	
Standard specifications		IEC 60129 VDE 0670	

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Table: Technical Data of 3 Phase Disconnecting Switch Fuse Combination

Description	Unit	Required	Offered
Manufacturer's Name		to be specified	
Type / Model		to be specified	
Installation		pole mounted	
Nominal Voltage	kV	20	
Rated Voltage	kV	24	
Rated Frequency	Hz	50	
Rated Normal Current	A	630	
Rated Breaking current			
Rated lightning-impulse withstand voltage	kV	125	
Power frequency test voltage	kV	50	
Rated short-time current	kA	25	
Rated short-circuit making current	kA	63	
Creepage distance for insulators	mm/kV	25	
Distance between phase centers (min)	mm	350	
Link Fuse	A	To be specified according to BOQ	
Operation mechanism		Manual	
All necessary accessories		to be confirmed	
Standard specifications		IEC 60129 VDE 0670	

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Table: Surge Arrester

Designation	Unit	Required	Offered
Manufacturer	-	To be specified	
Country of origin	-	To be specified	
Type	-	station metal oxide gapless	
Housing	-	silicon rubber	
Color	-	grey	
Nominal characteristics	-		
Rated max. network operating voltage	kV	24	
Rated operating voltage (Ur)	kV	24	
Rated continuous operating voltage (Uc)	kV	20	
Rated discharge current (peak)	kA	10	
Switching impulse current (peak)	kA	2	
Line discharge class (IEC 99-4)	-		
Rated frequency	Hz	50	
Protection characteristics			
Max. residual voltages			
- For a steep impulse current, ½ µs front, 10 kA.	kV	71	
- For lightning impulse current, 8/20 µs, 10 kA.	kV	67	
- For a switching impulse current 30/60 µs, 0.5 kA	kV	52	
Energy absorbing capacity	kJ/kV	4.3	
Operating performances			
High current impulse withstand (4/10 µs)	kA	100	
Temporary over voltage withstand (for 10s)	kV	24	

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Table: Surge Arrester

Designation	Unit	Required	Offered
Insulation levels			
- Lightning impulse withstand voltage	kV	125	
- Power frequency withstand voltage (1 m wet)	kV	50	
- Creepage distance	mm/kV	25	
- Cantilever strength	kN	-	
- Torsion strength	N-m	-	
Pressure relief capacity			
- Current amplitude (rms)	KA	17.5	
- X/R, asymmetry factor	-	17	
- Current duration	s	0.2	
Weights and dimensions:			
- Arrester height	mm	-	
- Arrester diameter	mm	-	
- Weight	kg	-	
Accessories			
Mounting hardware	-	Yes	
Ground Connector	-	Yes	
Insulating bases	-	Yes	
Discharge counter	-	-	
HV terminals connectors	-	Yes	
Standards			
	-	IEC 60099-4	
Quality control			
	-	ISO 9001	
Installation			
	-	Outdoor	

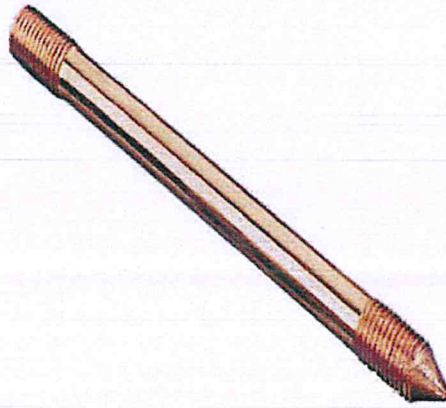
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Copper Ground Ear thing Rod

Diameter	20mm
Usage/Application	Power Distribution Earthing
Material	Copper
Color	Copper
Length Of Rod	2500mm

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Table: LV Underground Cable 0.6/1 kV, NYY 1 x 300 RM

Designation	Unit	Required	Offered
Manufacturer's name		To be specified	
Cable type (one – core)		NYN	
Conductor material		Copper	
Conductor shape		Circular stranded	
Nominal cross-sectional area of conductor	mm ²	300	
Insulation material of conductor	mm	PVC	
Insulation thickness		2.2	
Outer sheath material		PVC	
Thickness of outer sheath	mm	1.8	
Overall diameter of cable(D)	mm	30	
Weight of cable	kg/km	3219	
Minimum bending radius	mm	15 D	
Nominal voltage	kV	0.6/1.0	
Max. Permissible operating voltage	kV	1.2	
Service voltage	kV	0.4/0.230	
Frequency	Hz	50	
Effective a.c. resistance at 70° C	Ω/km	0.075	
Max. admissible short circuit current (1s)	kA	34.5	
Current carrying capacity (in air)	A	557	
Inductance per conductor	mH/km	To be specified	
Standards IEC 60502 DIN VDE 0271 VDE 0295 (IEC60228) VDE0293-		IEC 60502 DIN VDE 0271 VDE 0295 (IEC60228) VDE0293-	

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Table: LV Underground Cable 0.6/1 kV, NYY 1 x 185 Rm

Designation	Unit	Required	Offered
Manufacturer's name		To be specified	
Cable type (one – core)		NYY	
Conductor material		Copper	
Conductor shape		Circular stranded	
Nominal cross-sectional area of conductor	mm ²	185	
Insulation material of conductor		PVC	
Insulation thickness	mm	2.0	
Outer sheath material		PVC	
Thickness of outer sheath	mm	2.8	
Overall diameter of cable (D)	mm	25	
Weight of cable	kg/km	1959	
Minimum bending radius	mm	15 D	
Nominal voltage	kV	0.6/1.0	
Max. Permissible operating voltage	kV	1.2	
Service voltage	kV	0.4/0.230	
Frequency	Hz	50	
Effective a.c. resistance at 70° C	Ω/km	0.0991	
Max. admissible short circuit current (1s)	kA	21.3	
Current carrying capacity (in ground)	A	410	
Inductance per conductor	mH/km	To be specified	
Standards		IEC 60502 DIN VDE 0271 VDE 0295 (IEC60228) VDE0293	

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Table:LV Underground Cable 0.6/1 kV, NYY 4 x 120 SM

Designation	Unit	Required	Offered
Manufacturer's name		To be specified	
Cable type (four – core)		NYY	
Conductor material		Copper	
Conductor shape		Sector Stranded	
Nominal cross-sectional area of conductor	mm ²	120	
Insulation material of conductor		PVC	
Insulation thickness	mm	1.6	
Outer sheath material		PVC	
Thickness of outer sheath	mm	2.4	
Overall diameter of cable (D)	mm	43	
Weight of cable	kg/km	5676	
Minimum bending radius	mm	15 D	
Nominal voltage	kV	0.6/1.0	
Max. Permissible operating voltage	kV	1.2	
Service voltage	kV	0.4/0.230	
Frequency	Hz	50	
Effective a.c. resistance at 70° C	Ω/km	0.187	
Max. admissible short circuit current (1s)	kA	13.8	
Current carrying capacity (in ground)	A	285	
Inductance per conductor	mH/km	To be specified	
Standards		IEC 60502 DIN VDE 0271 VDE 0295 (IEC60228) VDE0293	

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Table: LV Underground Cable 0.6/1 kV, NYY 4 x 70SM

Designation	Unit	Required	Offered
Manufacturer's name		To be specified	
Cable type (four – core)		NYY	
Conductor material		Copper	
Conductor shape		Sector Stranded	
Nominal cross-sectional area of conductor	mm ²	70	
Insulation material of conductor		PVC	
Insulation thickness	mm	1.4	
Outer sheath material		PVC	
Thickness of outer sheath	mm	2.1	
Overall diameter of cable(D)	mm	36	
Weight of cable	kg/km	3375	
Weight of copper	kg/km	3243	
Minimum bending radius	mm	15 D	
Nominal voltage	kV	0.6/1.0	
Max. Permissible operating voltage	kV	1.2	
Service voltage	kV	0.4/0.230	
Frequency	Hz	50	
Effective a.c. resistance at 70° C	Ω/km	0.233	
Max. admissible short circuit current (1s)	kA	8.05	
Current carrying capacity (in ground)	A	200	
Inductance per conductor	mH/km	To be specified	
Standards		IEC 60502 DIN VDE 0271 VDE 0295 (IEC60228) VDE0293	

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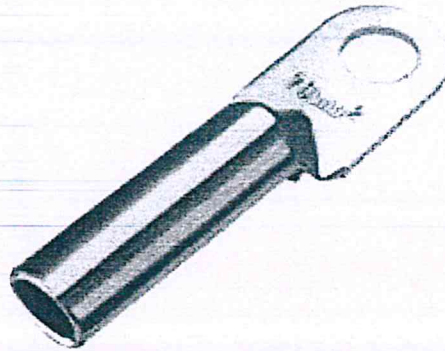


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Compression Cable Lugs

Color	selvar
Material	Almuneam
Size:	70 mm2
Application	Power Distribution

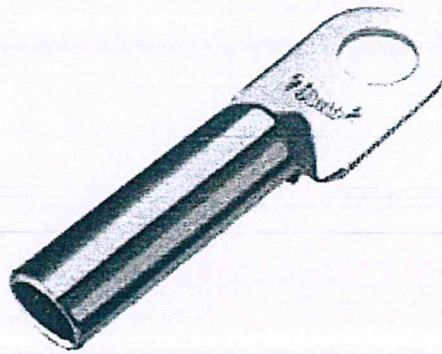
مشخصات تخنیکي برای تجهیزات شبکه توزیعی زرمت ولایت پکتیا قلم شماره (28) BOQ

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Standards

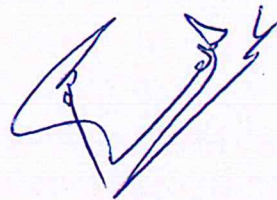


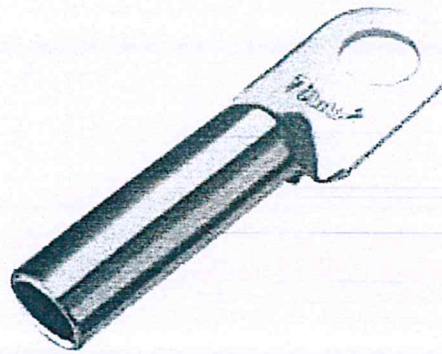


Compression Cable Lugs

Color	selvar
Material	Almuneam
Size:	95 mm2
Application	Power Distribution

مشخصات فنی برای تجهیزات شبکه توزیعی زرمت ولایت پکتیا قلم شماره (29) BOQ





Compression Cable Lugs

Color	selvar
Material	Almuneam
Size:	120 mm2
Application	Power Distribution

مشخصات فنی برای تجهیزات شبکه توزیعی زرمت ولایت پکتیا قلم شماره (30) BOQ



Table: Technical Data for Overhead Line Conductor ACSR 185/30 mm²

Designation	Unit	Required	Offered
Manufacturer's name		To be specified	
Type		Aluminum conductor Steel – reinforced (ACSR)	
Nominal cross-section	mm ²	185/30	
Cross-section ratio AL/St approx.		To be specified	
Steel			
- construction	N/mm	7/2.33	
- diameter	mm	6.99	
- cross-section	mm ²	29.8	
Aluminium			
- construction	N/mm	26/3.0	
- cross-section	mm ²	183.8	
Total cross-section	mm ²	213.6	
Conductor diameter approx.	mm	19	
Conductor weight			
- steel	kg/km	234	
- aluminium	kg/km	507	
- grease	kg/km	4.3	
- with grease total approx.	kg/km	745	
Current carrying capacity	A	535	
Nominal conductor breaking load	KN	65.27	
Calculated conductor resistance at 20° C	Ω/km	0.1571	
Standard length per reel approx.	m	to be specified	
Dispatch reel nominal size	m	to be specified	
Standard specifications		IEC 209 DIN 48204 BS EN 50182	

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Table: Technical Data for Overhead Line Conductor ACSR 70/12 mm²

Designation	Unit	Required	Offered
Manufacturer's name		To be specified	
Type		Aluminum conductor Steel – reinforced (ACSR)	
Nominal cross-section	mm ²	70/12	
Cross-section ratio AL/St approx.		To be specified	
Steel			
- construction	N/mm	7/1,44	
- diameter	mm	4.32	
- cross-section	mm ²	11.4	
Aluminum			
- construction	mm	26/1.85	
- cross-section	mm ²	69.9	
Total cross-section	mm ²	81.3	
Conductor diameter approx.	mm	11.7	
Conductor weight			
- steel	kg/km	89	
- aluminum	kg/km	193	
- grease	kg/km	1.7	
- with grease total approx.	kgVkm	283	
Current carrying capacity	A	290	
Nominal conductor breaking load	KN	26.27	
Calculated conductor resistance at 20° C	Ω/km	0.4132	
Standard length per reel approx.	m	to be specified	
Dispatch reel nominal size	m	to be specified	
Standard specifications		IEC 209 DIN 48204 BS EN 50182	

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Approved By:

Table: Technical Data for 20 kV Glass or Porcelain pin Insulator

Description	Unit	Required	Offered
Manufacturer's Name		to be specified	
Type		pin insulator	
Material		Glass or porcelain	
Rated voltage	kV	20	
Power frequency withstand voltage:			
- dry	kV	80	
- wet	KV	55	
Dry impulse withstand voltage:			
- positive	kV	135	
- negative	kV	140	
Minimum puncture voltage in oil	kV	130	
Mechanical tensile load "T"	kN	10	
Mechanical cantilever load "F"	kN	20	
Nominal diameter "D"	mm	238	
Maximum height "H"	mm	158	
Min. nominal creepage distance	mm	475	
Number of the glass bodies	number	2	
Unit weight	kg	to be specified	
With all necessary accessories for Installation incl. metal thimbles threaded for screwing on to steel spindles			
Standard specifications		IEC 60383,60305 BS 137 part 2	

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Table: Technical Data for 20 kV Glass or Porcelain Tension Insulator

Designation	Unit	Required	Offered
Manufacturer's Name		to be specified	
Type		tension insulator	
Material		Glass or porcelain	
Rated voltage	kV	20	
Minimum mechanical failing load	kN	40	
Power frequency withstand voltage:			
- dry	kV	50	
- wet	kV	33	
Dry impulse withstand voltage:			
- positive	kV	70	
- negative	kV	75	
Minimum puncture voltage in oil	kV	100	
Nominal spacing "P"	mm	110	
Nominal diameter "D"	mm	175	
Min. nominal creepage distance	mm	475	
Number of elements	number	3	
Ball and socket coupling size (IEC 120)		11	
Stainless steel split pin size		11	
Weight	kg	to be specified	
With all necessary accessories for installation			
Standard specifications		IEC 60383,60305 BS 137 part 2	

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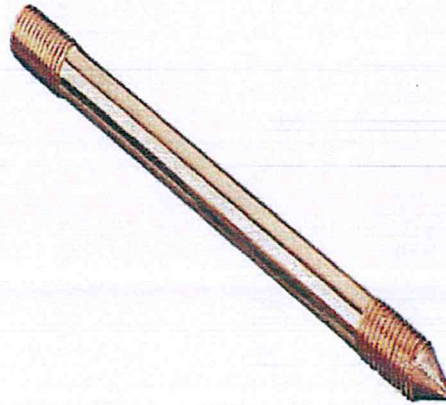
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Copper Ground Ear thing Rod

Diameter	20mm
Usage/Application	Power Distribution Earthing
Material	Copper
Color	Copper
Length Of Rod	1000mm

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Table: Technical Data for ABC Low Voltage Cables LV ABC 4 x 70 mm²

Description	Unit	Required	Offered
Manufacturer			
Rated Voltage	kV	0.6/1	
<u>Phases and Neutral</u>			
Material		Aluminum	
Cross section	mm ²	70	
Class		2	
Cross section shape		Circular compacted	
Number of wires		≥12	
Diameter of wires	mm	To be specified	
Diameter of conductor	mm	9.7	
Maximum conductor DC resistance at 20 °C	ohm/km	0.443	
Insulation Material		Black XLPE	
Insulation thickness	Mm	1.5	
Breaking load of single core, min.	KN	11	
Breaking load of complete cable, min.	KN	39.2	
<u>Technical Characteristics</u>			
Outer diameter of bundle (D)	mm	31.3	
Weight of conductor	kg/km	960	
Minimum bending radius	mm	12 D	
Maximum lay of cores			
Current rating /ambient 40 °C	A	205	
Maximum conductor temperature/normal operation	°C	90	
Maximum conductor temperature/short circuit	°C	250	
Rated short circuit /phase	kA	5.0	
Length of conductor drum	m	To be specified	
Gross weight of loaded drum	kg	To be specified	
Standard C 60502		IEC 60502	
NFA2X		NFA2X	
(VDE 0276 - 626 4F-1),		(VDE 0276 - 626 4F-1),	
		AsXS (n)	
		(PL WT92/K396),	
		1-AES (CSN 34761-4F)	
		AS/NZS 3560.1	

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Table: Technical Data for ABC Low Voltage Cables LV ABC 4 x 95 mm²

Description	Unit	Required	Offered
Manufacturer			
Rated Voltage	kV	0.6/1	
<u>Phases and Neutral</u>			
Material		Aluminum	
Cross section	mm ²	95	
Class		2	
Cross section shape		circular	
		compacted	
Number of wires		≥15	
Diameter of wires	mm	To be specified	
Diameter of conductor	mm	11.4	
Maximum conductor DC resistance at 20 °C	ohm/km	0.320	
Insulation Material		Black XLPE	
Insulation thickness	Mm	1.7	
Breaking load of single core, min.	KN	15	
Breaking load of complete cable, min.	KN	53.2	
<u>Technical Characteristics</u>			
Outer diameter of bundle (D)	mm	35.3	
Weight of conductor	kg/km	1350	
Minimum bending radius	mm	15 D	
Maximum lay of cores			
Current rating /ambient 40 °C	A	250	
Maximum conductor temperature/normal operation	°C	90	
Maximum conductor temperature/short circuit	°C	250	
Rated short circuit /phase	kA	6.8	
Length of conductor drum	m	To be specified	
Gross weight of loaded drum	kg	To be specified	
Standard 60502		IEC 60502	
NFA2X		NFA2X	
		(VDE 0276 - 626 4F-1),	
		AsXS (n)	
		(PL WT92/K396),	
		1-AES (CSN 34761-4F)	
		AS/NZS 3560.1	

Length of

Gross weight
Standard

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Table: Technical Data for ABC Low Voltage Cables LV ABC 4 x 120 mm²

Description	Unit	Required	Offered
Manufacturer			
Rated Voltage	kV	0.6/1	
<u>Phases and Neutral</u>			
Material		Aluminum	
Cross section	mm ²	120	
Class		2	
Cross section shape		circular compacted	
Number of wires		≥15	
Diameter of wires	mm	To be Specified	
Diameter of conductor	mm	12.5	
Maximum conductor DC resistance at 20 °C	ohm/km	0.253	
Insulation Material		Black XLPE	
Insulation thickness	Mm	1.8	
Breaking load of single core, min.	KN	18.8	
Breaking load of complete cable, min.	KN	67.2	
<u>Technical Characteristics</u>			
Outer diameter of bundle (D)	mm	39.8	
Weight of conductor	kg/km	1650	
Minimum bending radius	mm	15 D	
Maximum lay of cores			
Current rating /ambient 40 °C	A	290	
Maximum conductor temperature/normal operation	°C	90	
Maximum conductor temperature/short circuit	°C	250	
Rated short circuit /phase	kA	8.5	
Length of conductor drum	m	To be specified	
Gross weight of loaded drum	kg	To be specified	
Standard		IEC 60502	
NFA2X (VDE 0276 - 626 4F-1), AsXS (n) (PL WT92/K396), 1-AES (CSN 34761-4F) AS/NZS 3560.1		NFA2X (VDE 0276 - 626 4F-1), AsXS (n) (PL WT92/K396), 1-AES (CSN 34761-4F) AS/NZS 3560.1	

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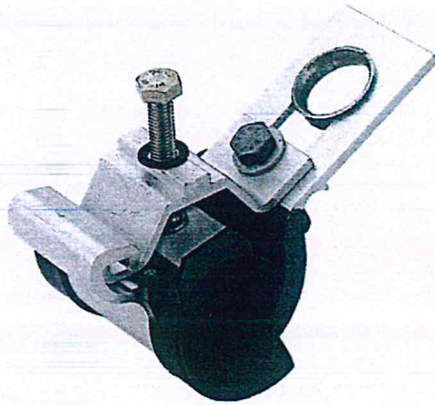
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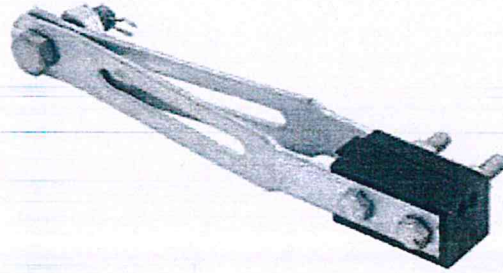


LV ABC Cable Suspension Clamp

MODEL	CROSS-SECTION(mm2)
SM140	4 X (35-120)

مشخصات تخنیکي برای تجهیزات شبکه توزیعی زرمت ولایت پکتیا قلم شماره (47) BOQ





AL-ABC - Tension Clamp

Usage	Line Fittings
Type	Tension Clamp
Conductor Range	4X(50-120)mm2
Application	Low Voltage 1kv
Materials	AL- Robber

مشخصات تخنیکي برای تجهیزات شبکه توزیعی زرمت ولایت پکتیا قلم شماره (43) BOQ



Table: LV Underground Cable 0.6/1 kV, NYY- 4x 16 RM

Designation	Unit	Required	Offered
Manufacturer's name		To be specified	
Cable type (four – core)		NYY-J	
Conductor material		Copper	
Conductor shape		Circular stranded	
Nominal cross-sectional area of conductor	mm ²	16	
Insulation material of conductor		PVC	
Insulation thickness	mm	1.0	
Outer sheath material		PVC	
Thickness of outer sheath	mm	1.8	
Overall diameter of cable(D)	mm	24	
Weight of cable	kg/km	1100	
Minimum bending radius	mm	12 D	
Nominal voltage	kV	0.6/1.0	
Max. Permissible operating voltage	kV	1.2	
Service voltage	kV	0.4/0.230	
Frequency	Hz	50	
Effective a.c. resistance at 70° C	Ω/km	1.38	
Max. admissible short circuit current (1s)	kA	1.84	
Current carrying capacity (in ground)	A	90	
Inductance per conductor	mH/km	To be specified	
Standards IEC 60502		IEC 60502 DIN VDE 0271 VDE 0295 (IEC60228) VDE0293	

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Table: LV Underground Cable 0.6/1 kV, NYY- 4x 10 RM

Designation	Unit	Required	Offered
Manufacturer's name		To be specified	
Cable type (four – core)		NYY-J	
Conductor material		Copper	
Conductor shape		Circular stranded	
Nominal cross-sectional area of conductor	mm ²	10	
Insulation material of conductor		PVC	
Insulation thickness	mm	1.0	
Outer sheath material		PVC	
Thickness of outer sheath	mm	1.8	
Overall diameter of cable(D)	mm	21	
Weight of cable	kg/km	743	
Minimum bending radius	mm	12 D	
Nominal voltage	kV	0.6/1.0	
Max. Permissible operating voltage	kV	1.2	
Service voltage	kV	0.4/0.230	
Frequency	Hz	50	
Effective a.c. resistance at 20° C	Ω/km	1.83	
Max. admissible short circuit current (1s)	kA	1.15	
Current carrying capacity (in ground)	A	60	
Inductance per conductor	mH/km	To be specified	
Standards		IEC 60502 DIN VDE 0271 VDE 0295 (IEC60228) VDE0293	

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Compression Cable Lugs

Color	Golden
Material	Copper
Size:	10 mm ²
Application	Power Distribution

مشخصات فنی برای تجهیزات شبکه توزیع زرمت ولایت پکتیا قلم شماره (52) BOQ - تجهیزات شبکه توزیع زرمت ولایت

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Inductance

Standards





Compression Cable Lugs

Color	Golden
Material	Copper
Size:	16 mm ²
Application	Power Distribution

34

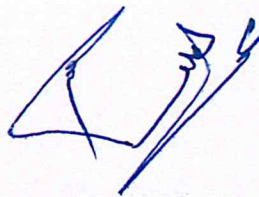


مشخصات تخنیکي برای تجهیزات شبکه توزیعی زرمات ولایت پکتیا قلم شماره (51) BOQ - تجهیزات شبکه توزیعی زرمات ولایت



Compression Cable Lugs

Color	Golden
Material	Copper
Size:	(70-300)mm ²
Application	Power Distribution





Compression Cable Lugs

Color	Golden
Material	Copper
Size:	120 mm ²
Application	Power Distribution

مشخصات تخنیکي برای تجهیزات شبکه توزیعی زرمت ولایت پکتیا قلم شماره (25) BOQ



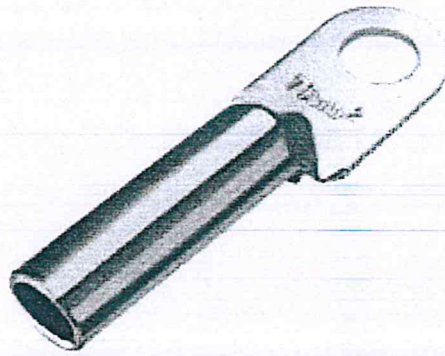


Compression Cable Lugs

Color	Golden
Material	Copper
Size:	70 mm2
Application	Power Distribution

مشخصات تخنیکي برای تجهیزات شبکه توزیعی زرمت ولایت پکتیا قلم شماره (27) BOQ





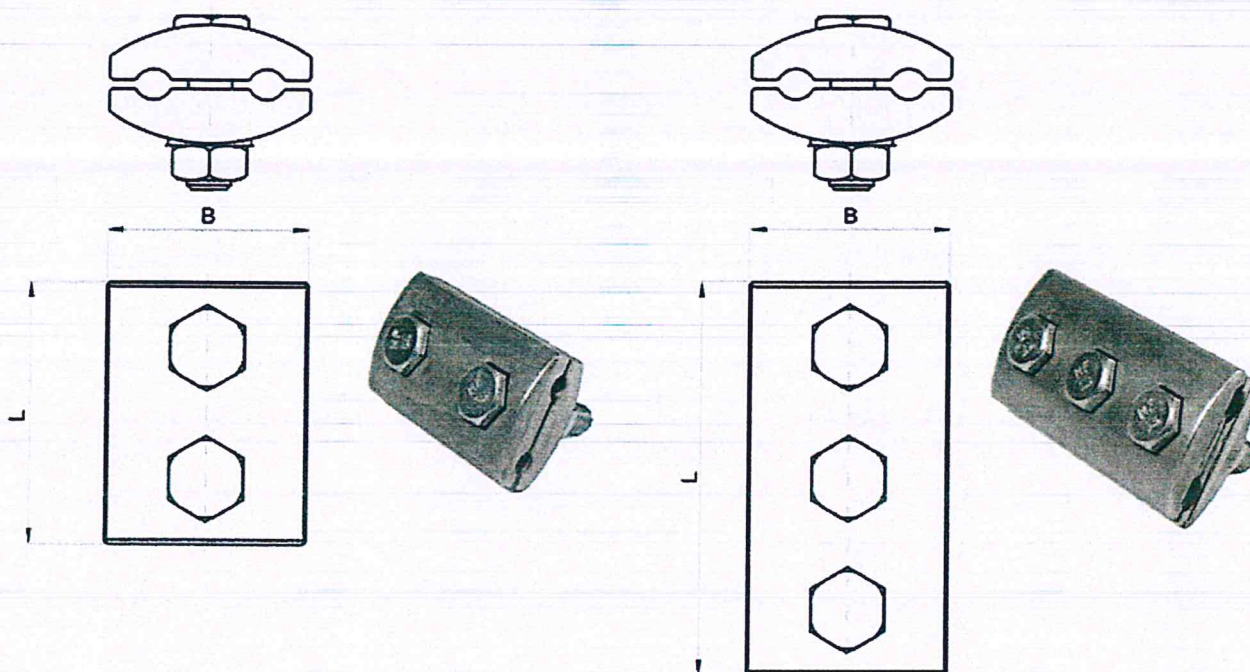
Compression Cable Lugs

Color	selvar
Material	Almuneam
Size:	25 mm2
Application	Power Distribution

مشخصات تخنیکي برای تجهیزات شبکه توزیعی زرمت ولایت پکتیا قلم شماره (56) BOQ تجهیزات شبکه توزیعی زرمت ولایت



Standard: DIN 48 075



process and AlAl Groove. Clamps are made using die casting process and the inside grooves are cogged, which increases safety regarding pulling out and provides high-quality electrical contact (the grooves are made in such a way that aluminum oxide from the conductor surface is broken, which reduces transitional resistance between the clamp and the conductor). The body of the clamp is made of aluminum alloy of high tensile strength and is corrosion resistant. Their technical characteristics provide fast, easy and reliable installation and long-life and safe usage with minor losses on the network due to very low transitional resistance. Bolts and nuts are Zinc plated. Inside grooves are protected with electrical contact grease. with electrical contact grease.

NOTE: On Customer's request the clamps can be delivered with hot-dip galvanized or stainless steel X 5 CrNi 18-10 bolt parts.

Insulation piercing connectors for connections to cables

Application

All piercing connectors of EP and PX type (see page 9) can be used as a connection between LV-ABC and service or main cables.

The DZ6 connector is designed for connection of cables with large cross sections to insulated LV-ABC lines. When tightening the bolts, the teeth of the contact plates penetrate the insulation and establish a perfect contact. The bolts (wrench size 17 mm) are tightened until the heads shear off. Stripping of insulation is avoided and the cable end is sealed with a cap.

Features

- Suitable for aluminium and copper conductors
- Potential free tightening bolts allow safe installations on live lines
- Connectors type DZ6 exceed requirements according to UL486 and EATS 43-14, including 4 kV voltage withstand test in air
- Connector teeth are factory greased and covered with a rubber seal to retard water entry and corrosion
- Components not losable, end cap attached to body

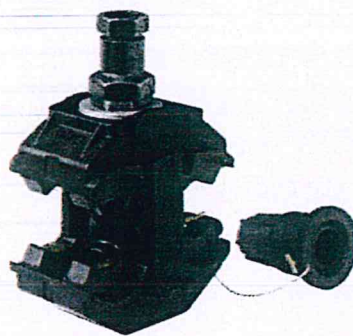
- Insulation material made of weather and UV resistant glass fibre reinforced polymer
- Contact plates made of tinned copper, bolt made of steel with Geomet (Chromium free) protection

For inline connections of LV-ABC to cables see section "Complete connection kits" on 35.

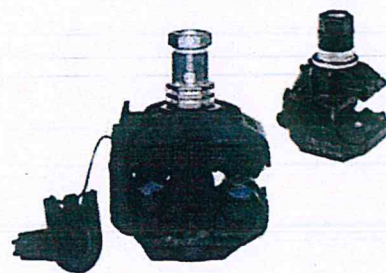
For cable terminations and core protection tubing see pages 25 and 26.



Type: DZ6 UL-F



Type: P3X 95



Type: P2X 95 Mk2, EP95-13

Simultaneous piercing of main (insulated LV-ABC) and branch (cable core) conductor

Ordering description	Application range (mm ²)		Bolt	Torque (Nm)	Weight (kg/100 pcs)
	LV-ABC	Cable conductor			
EP95-13	16 – 95	5.0	1 x M6	7	5.0
P2X 95 Mk2	16 – 95	4 – 35	1 x M8	11	10.8
P3X 95	25 – 95	16.0	1 x M8	18	16.0
DZ6 UL-F-CHINA-N	25 – 120 (150*)	120 – 240	1 x M10	40	30.0

* Fits up to this conductor size, but current rating I_{max} of connector (300 A according to HD 626S1 part 6E) is lower than possible cable rating.

