

Table: Technical Data for Distribution Transformer 630 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		630	
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	%	6	
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	

Resistance per phase:			
- HV winding	$\Omega$	to be specified	
- LV winding	$\Omega$	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	
<b>Accessories:</b>			
- 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	
<b>Weights:</b>			
- Total	kg	to be specified	
- Oil	kg	to be specified	
<b>Dimensions:</b>			
- Length	mm	to be specified	
- Width	mm	to be specified	
- Height	mm	to be specified	
- Distance between wheels centers	mm	to be specified	
Standard specifications		IEC 60076-7 IEC 60354	

**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	%	±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	

Resistance per phase:			
- HV winding	$\Omega$	to be specified	
- LV winding	$\Omega$	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	
<b>Accessories:</b>			
- 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	
<b>Weights:</b>			
- Total	kg	to be specified	
- Oil	kg	to be specified	
<b>Dimensions:</b>			
- Length	mm	to be specified	
- Width	mm	to be specified	
- Height	mm	to be specified	
- Distance between wheels centers	mm	to be specified	
Standard specifications		IEC 60076-7 IEC 60354	

**Table: Technical Data for Distribution Transformer 315 kVA, 20/0.4 kV**

Designation	Unit	Required	Offered
Manufacturer's Name		To be specified	
Type / Model		Oil-immersed	
Installation		With conservator outdoor	
Dielectric		oil, without PCB	
Oil type		to be specified	
Rated frequency	Hz	50	
Rated power	kVA	315	
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:			
- 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	

Resistance per phase:			
- HV winding	$\Omega$	to be specified	
- LV winding	$\Omega$	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	
<b>Accessories:</b>			
- 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	
<b>Weights:</b>			
- Total	kg	to be specified	
- Oil	kg	to be specified	
<b>Dimensions:</b>			
- Length	mm	to be specified	
- Width	mm	to be specified	
- Height	mm	to be specified	
- Distance between wheels centers	mm	to be specified	
Standard		IEC 60076-7 IEC 60354	

**Table: Technical Data for Distribution Transformer 200 kVA, 20/0.4 kV**

Designation	Unit	Required	Offered
Manufacturer's Name		To be specified	
Type / Model		Oil-immersed	
Installation		With conservator outdoor	
Dielectric		oil, without PCB	
Oil type		to be specified	
Rated frequency	Hz	50	
Rated power	kVA	200	
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:			
- 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	

Resistance per phase:			
- HV winding	$\Omega$	to be specified	
- LV winding	$\Omega$	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	40	
Cooling system		ONAN	
Conductor material			
Insulating material of windings		Copper	
Insulation class		to be specified	
Standard bushings		yes	
<b>Accessories:</b>			
- 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	
<b>Weights:</b>			
- Total	kg	to be specified	
- Oil	kg	to be specified	
<b>Dimensions:</b>			
- Length	mm	to be specified	
- Width	mm	to be specified	
- Height	mm	to be specified	
- Distance between wheels centers	mm	to be specified	
Standard		IEC 60076-7 IEC 60354	



مشخصات تخنیکي برای تجهیزات اصلاح لات کابل و لاین شبکات برق

**Table: LV Underground Cable 0.6/1 kV, NYY- 4 x 25 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 <sup>2</sup>	25	
Insulation material of conductor		PVC	
Insulation thickness	mm	1.2	
Outer sheath material		PVC	
Thickness of outer sheath	mm	1.8	
Overall diameter of cable(D)	mm	27	
Weight of cable	kg/km	1541	
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	0.87	
Max. admissible short circuit current (1s)	kA	2.87	
Current carrying capacity (in ground)	A	129	
Inductance per conductor	mH/km	To be specified	
Standards		IEC 60502 DIN VDE 0271 VDE 0295 (IEC60228) VDE0293	

مشخصات تخنیکي برای تجهیزات اصلاح لات کیبل و لاین شبکات برق

**Table: LV Underground Cable 0.6/1 kV, NYY 4 x 35 RM**

Designation	Unit	Required	Offered
Manufacturer's name		To be specified	
Cable type (four – core)		NYY	
Conductor material		Copper	
Conductor shape		Circular Stranded	
Nominal cross-sectional area of conductor	mm <sup>2</sup>	35	
Nominal cross-sectional area of conc. cond.	mm <sup>2</sup>	16	
Insulation material of conductor		PVC	
Insulation thickness	mm	1.2	
Outer sheath material		PVC	
Thickness of outer sheath	mm	1.8	
Overall diameter of cable(D)	mm	30	
Weight of cable	kg/km	1999	
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	0.628	
Max. admissible short circuit current (1s)	kA	4.02	
Current carrying capacity (in ground)	A	157	
Inductance per conductor	mH/km	To be specified	
Standards		IEC 60502 DIN VDE 0271 VDE 0295 (IEC60228) VDE0293	

مشخصات تخنیکي برای تجهیزات اصلاح لات کیبل و لاین شبکات برق

**Table: Technical Data for Overhead Line Conductor ACSR 185/30 mm<sup>2</sup>**

Designation	Unit	Required	Offered
Manufacturer's name		To be specified	
Type		Aluminum conductor Steel – reinforced (ACSR)	
Nominal cross-section	mm <sup>2</sup>	185/30	
Cross-section ratio AL/St approx. Steel		To be specified	
- construction	mm	7/2.33	
- diameter	mm	2.33	
- cross-section	mm <sup>2</sup>	29.8	
Aluminium			
- construction	mm	26/3.0	
- cross-section	mm <sup>2</sup>	183.8	
Total cross-section	mm <sup>2</sup>	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	744	
Current carrying capacity	A	535	
Nominal conductor breaking load	KN	66.28	
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	

مشخصات تخیکی برای تجهیزات اصلاح لات کیل و لاین شبکات برق

**Table: Technical Data for Overhead Line Conductor ACSR 150/25 mm<sup>2</sup>**

Designation	Unit	Required	Offered
Manufacturer's name		To be specified	
Type		Aluminum conductor Steel – reinforced (ACSR)	
Nominal cross-section	mm <sup>2</sup>	150/25	
Cross-section ratio AL/St approx.		To be specified	
Steel			
- construction	mm	7/2.1	
- diameter	mm	2.1	
- cross-section	mm <sup>2</sup>	24.24	
Aluminium			
- construction	mm	26/2.7	
- cross-section	mm <sup>2</sup>	148.86	
Total cross-section	mm <sup>2</sup>	173.11	
Conductor diameter approx.	mm	17.1	
Conductor weight			
- steel	kg/km	190	
- aluminium	kg/km	411	
- grease	kg/km	3.7	
- with grease total approx.	kg/km	604.7	
Current carrying capacity	A	470	
Nominal conductor breaking load	KN	54.37	
Calculated conductor resistance at 20° C	Ω/km	0.1939	
Standard length per reel approx.	m	to be specified	
Dispatch reel nominal size	m	to be specified	
Standard specifications		IEC 209 DIN 48204	

مشخصات تخنیکي برای تجهیزات اصلاح لات کیبل و لاین شبکات برق

**Table: Technical Data for Overhead Line Conductor ACSR 120/20 mm<sup>2</sup>**

Designation	Unit	Required	Offered
Manufacturer's name		To be specified	
Type		Aluminum conductor Steel – reinforced (ACSR)	
Nominal cross-section	mm <sup>2</sup>	120/20	
Cross-section ratio AL/St approx.		To be specified	
Steel			
- construction	mm	7/1.9	
- diameter	mm	5.7	
- cross-section	mm <sup>2</sup>	19.85	
Aluminum			
- construction	mm	26/2.44	
- cross-section	mm <sup>2</sup>	121.6	
Total cross-section	mm <sup>2</sup>	141.4	
Conductor diameter approx.	mm	15.5	
Conductor weight			
- steel	kg/km	156	
- aluminum	kg/km	335	
- grease	kg/km	2.9	
- with grease total approx.	kg/km	495.9	
Current carrying capacity	A	410	
Nominal conductor breaking load	KN	45.65	
Calculated conductor resistance at 20°	Ω/km	0.2374	
C	m	to be specified	
Standard length per reel approx.	m	to be specified	
Dispatch reel nominal size			
Standard specifications		IEC 209 DIN 48204	

مشخصات تخریکی برای تجهیزات اصلاح لات کیبل و لاین شبکات برق

**Table: Technical Data for Overhead Line Conductor ACSR 95/15 mm<sup>2</sup>**

Designation	Unit	Required	Offered
Manufacturer's name		To be specified	
Type		Aluminum conductor Steel – reinforced (ACSR)	
Nominal cross-section	mm <sup>2</sup>	95/15	
Cross-section ratio AL/St approx.		To be specified	
Steel			
- construction	mm	7/1.67	
- diameter	mm	1.67	
- cross-section	mm <sup>2</sup>	6.2	
Aluminum		15.33	
- construction	mm		
- cross-section	mm <sup>2</sup>	26/2.15	
Total cross-section	mm <sup>2</sup>	94.4	
Conductor diameter approx.	mm	109.7	
Conductor weight		13.6	
- steel	kg/km		
- aluminum	kg/km	120	
- grease	kg/km	260	
- with grease total approx.	kg/km	2.2	
Current carrying capacity	A	350	
Nominal conductor breaking load	KN	35.17	
Calculated conductor resistance at 20° C	Ω/km	0.3058	
Standard length per reel approx.	m	to be specified	
Dispatch reel nominal size	m	to be specified	
Standard specifications		IEC 209 DIN 48204	

مشخصات فنی برای تجهیزات اصلاح لات کیبل و لاین شبکه‌های برق

**Table: Technical Data for Overhead Line Conductor ACSR 70/12 mm<sup>2</sup>**

Designation	Unit	Required	Offered
Manufacturer's name		To be specified	
Type		Aluminum conductor Steel – reinforced (ACSR)	
Nominal cross-section	mm <sup>2</sup>	70/12	
Cross-section ratio AL/St approx.		To be specified	
Steel			
- construction	mm		
- cross-section	mm <sup>2</sup>	7/1,44	
Aluminum		11.4	
- construction	mm		
- cross-section	mm <sup>2</sup>	26/1.85	
Total cross-section	mm <sup>2</sup>	69.9	
Conductor diameter approx.	mm	81.3	
Conductor weight		11.72	
- steel	kg/km		
- aluminum	kg/km	89	
- grease	kg/km	193	
- with grease total approx.	kgV/km	1.7	
Current carrying capacity	A	283.7	
Nominal conductor breaking load	KN	290	
Calculated conductor resistance at 20° C	Ω/km	26.80	
Standard length per reel approx.	m	0.413	
Dispatch reel nominal size	m	to be specified	
		to be specified	
Standard specifications		IEC 209 DIN 48204	

مشخصات تخنیکي برای تجهیزات اصلاح لات کیبل و لاین شبکات برق

Table: Technical Data for ABC Low Voltage Cables LV ABC 4 x 120 mm<sup>2</sup>

Description	Unit	Required	Offered
Manufacturer			
Rated Voltage	kV	0.6/1	
<b><u>Phases and Neutral</u></b>			
Material		Aluminum	
Cross section	mm <sup>2</sup>	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	
<b><u>Technical Characteristics</u></b>			
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	



مشخصات تخنیکي برای تجهیزات اصلاح لات کیبل و لاین شبکات برق

**Table:Technical Data for ABC Low Voltage Cables LV ABC 4 x 95 mm<sup>2</sup>**

Description	Unit	Required	Offered
Manufacturer			
Rated Voltage	kV	0.6/1	
<b><u>Phases and Neutral</u></b>			
Material		Aluminum	
Cross section	mm <sup>2</sup>	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	
<b><u>Technical Characteristics</u></b>			
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		IEC 60502 NFA2X (VDE 0276 - 626 4F-1), AsXS (n) (PL WT92/K396), 1-AES (CSN 34761-4F) AS/NZS 3560.1	

**Table: Technical Data for ABC Low Voltage Cables LV ABC 4 x 70 mm<sup>2</sup>**

Description	Unit	Required	Offered
Manufacturer			
Rated Voltage	kV	0.6/1	
<b><u>Phases and Neutral</u></b>			
Material		Aluminum	
Cross section	mm <sup>2</sup>	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	
<b><u>Technical Characteristics</u></b>			
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		IEC 60502 NFA2X (VDE 0276 - 626 4F-1), AsXS (n) (PL WT92/K396), 1-AES (CSN 34761-4F) AS/NZS 3560.1	

مشخصات تخنیکي برای تجهیزات اصلاح لات کیبل و لاین شبکات برق

**Table: Technical Data for ABC Low Voltage Cables LV ABC 4 x 150 mm<sup>2</sup>**

Description	Unit	Required	Offered
Manufacturer			
Rated Voltage	kV	0.6/1	
<b><u>Phases and Neutral</u></b>			
Material		Aluminum	
Cross section	mm <sup>2</sup>	150	
Class		2	
Cross section shape		circular compacted	
Number of wires		≥15	
Diameter of wires	mm	To be Specified	
Diameter of conductor	mm	13.3	
Maximum conductor DC resistance at 20 °C	ohm/km	0,206	
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	84,0	
<b><u>Technical Characteristics</u></b>			
Outer diameter of bundle (D)	mm	43,9	
Weight of conductor	kg/km	2020	
Minimum bending radius	mm	15 D	
Maximum lay of cores			
Current rating /ambient 40 °C	A	280	
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	

**Table : LOW VOLTAGE MCCB – 630 A FOR OUTGOING FEEDER**

Description	Unit	Required	Offered
Manufacturer	-	<i>To be specified</i>	
TYPE		<i>INDOOR</i>	
MCCB: rated current	A	630	
Rated continues current	A	630	
Trip unit	A	630	
Ultimate breaking capacity	kA	>50	
Short circuit current	kA	14.2	
Rated operation voltage	V	415- 690	
Frequency	Hz	50	
Rated insulating voltage	V	800	
Temperature rang	C°	-5 to +40	
Rated impulse voltage	KV	8	
Pole quantity	pole	3	
Standard	-	IEC 60947.2	

**Table : LOW VOLTAGE MCCB – 400 A FOR OUTGOING FEEDER**

Description	Unit	Required	Offered
Manufacturer	-	<i>To be specified</i>	
MCCB: rated current	A	400	
Rated continues current	A	400	
Trip unit	A	400	
Ultimate breaking capacity	kA	>50	
Short circuit current	kA	8.9	
Rated operation voltage	V	415- 690	
Frequency	Hz	50	
Rated insulating voltage	V	800	
Temperature rang	C <sup>0</sup>	-5 to +40	
Rated impulse voltage	KV	8	
Pole quantity	pole	3	
Standard	-	IEC 60947.2	

**Table: LOW VOLTAGE MCCB – 250 A FOR OUTGOING FEEDER**

Description	Unit	Required	Offered
Manufacturer	-	<i>To be specified</i>	
Type		<i>indoor</i>	
MCCB: rated current	A	250	
Rated continues current	A	250	
Trip unit	A	250	
Ultimate breaking capacity	kA	>35	
Short circuit current	kA	5.7	
Rated operation voltage	V	415- 690	
Frequency	Hz	50	
Rated insulating voltage	V	800	
Temperature rang	C <sup>0</sup>	-5 to +40	
Rated impulse voltage	KV	6	
Pole quantity	pole	3	
Standard	-	IEC 60947.2	

**Table : LOW VOLTAGE MCCB – 100 A FOR OUTGOING FEEDER**

Description	Unit	Required	Offered
Manufacturer	-	<i>To be specified</i>	
type		<i>indoor</i>	
MCCB: rated current	A	100	
Rated continues current	A	100	
Trip unit	A	100	
Ultimate breaking capacity	kA	>25	
Short circuit current	kA	2.28	
Rated operation voltage	V	415- 690	
Frequency	Hz	50	
Rated insulating voltage	V	800	
Temperature rang	C <sup>0</sup>	-5 to +40	
Rated impulse voltage	KV	8	
Pole quantity	pole	3	
Standard	-	IEC 60947.2	

**Table: Technical Data Disconnecting Switch 20kV, 630 A**

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	



**Table: Technical Data Disconnecting Switch Combination fuse 20kV, 630 A**

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	

**Table: Technical Data for Low Voltage Porcelain pin Insulator**

Designation	Unit	Required	Offered
Manufacturer's Name		to be specified	
Type		pin insulator	
Material		porcelain	
Rated voltage	kV	0.4	
Dry flashover voltage	kV	25	
Wet flashover voltage	kV	15	
One minute dry voltage	kV	23	
One minute wet voltage	kV	13	
Puncture voltage	kV	33	
Mechanical breaking load	kg	1350	
Weight	kg	to be specified	
With all necessary accessories for Installation incl. metal thimbles threaded for screwing on to steel spindles		to be specified	
Standard specifications		As per IEC	

مشخصات فنی تجهیزات اصلاح ولت متفرقه شبکه‌های برق مورد ضرورت واحد های برشنا شرکت بابت سال 1401

**Table: Technical Data for Low Voltage Porcelain Tension Insulator**

Designation	Unit	Required	Offered
Manufacturer's Name		to be specified	
Type		tension insulator	
Material		porcelain	
Rated voltage	kV	0.4	
Dry flashover voltage	kV	35	
Wet flashover voltage	kV	18	
One minute dry voltage	kV	32	
One minute wet voltage	kV	16	
Puncture voltage	kV	46	
Mechanical breaking load	kg	9100	
Weight	kg	to be specified	
With all necessary accessories for installation		to be specified	
Standard specifications		As per IEC	

مشخصات تخنیکي تجهیزات اصلاح لات متفرقه شبكات برق مورد ضرورت واحد های برشنا شرکت بابت سال 1401

**Table: Technical Data for 20 kV Fiber pin Insulator**

Description	Unit	Required	Offered
Manufacturer's Name		to be specified	
Type		pin insulator	
Material		silicon rubber	
Rated voltage	kV	24	
Power frequency withstand voltage:	KV	65	
Dry Lightning impulse withstand voltage:	KV	145	
Leakage distance	mm	610	
Min Arc distance	mm	215	
Section length	mm	305	
Specified mechanical load	KN	11	
Nominal diameter "D"	mm	to be specified	
Maximum height "H"	mm	to be specified	
Min. nominal creepage distance	mm	to be specified	
Number of the fiber	number	to be specified	
Unit weight	kg	to be specified	
With all necessary accessories for Installation incl. metal thimbles threaded for screwing on to steel spindles			
Reference standard		IEC 61109	

مشخصات فنی تجهیزات اصلاح لات متفرقه شبکه‌های برق مورد ضرورت واحد های برشنا شرکت بابت سال 1401

Table: **Technical Data for 20 kV Fiber Tension Insulator**

Designation	Unit	Required	Offered
Manufacturer's Name		to be specified	
Type		tension insulator	
Material		silicon rubber	
Rated voltage	kV	24	
Minimum mechanical failing load	kN	70	
Height	MM	450	
Insulating distance Li.	MM	235	
Min.nominal creepage distance	MM	635	
Diameter of shed	MM	148/118	
1 min power frequency wet withstand voltage not less than	KV	42	
Full wave lightning impulse voltage (peak value)	KV	150	
Dry impulse withstand voltage:	KV	to be specified	
Minimum puncture voltage in oil	kV	to be specified	
Number of elements	number	to be specified	
Weight	kg	to be specified	
With all necessary accessories for installation standard		IEC 61109	



### **LV ABC Cable Suspension Clamp**

MODEL	CROSS-SECTION( mm2)
SM140	4 X (70-150)

## Anchor clamps for LV-ABC lines with insulated neutral messenger

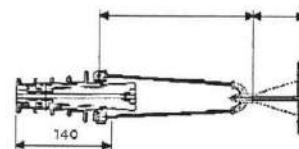
### Application

The clamps are designed to anchor LV-ABC lines with insulated neutral messenger. The clamp consists of an aluminium alloy cast body and self-adjusting plastic wedges which clamp the neutral messenger without damaging its insulation.

The flexible stainless steel bail protected by plastic wear-resistant saddle allows installations of up to 3 clamps on a bracket. The clamp and the bracket are available either separately or together as assembly.

### Features

- Tool free installation
- No loose parts
- Exceeds requirements according to EN 50483-3 and NFC 33-04
- Clamp body made of corrosion resistant aluminium alloy, bail of stainless steel, wedges of weather and UV resistant polymer
- Universal fixing of bracket by 2 bolts M14 or stainless steel straps of 20 x 0.7 mm
- Bracket made of corrosion resistant aluminium alloy
- Maximum line deviation angles of 50° for single and 100° for double anchoring



Type: PA 1500x20

Type: EA xxxx

Dimensions: mm

Neutral messenger Cross section (mm²)	Diameter (mm)	Ordering Description	Breaking load (kN)	Weight (kg/10 pcs)
<b>Anchor clamp without bracket</b>				
25 – 35	8 – 11	PA 1000	10.0	3.2
50 – 70	12 – 14	PA 1500x20	15.0	3.4
50 – 70	12 – 14	PA 2000	20.0	4.1
95	14 – 16	PA 95-2000	20.0	4.1
<b>Universal suspension clamp</b>				
25 – 35	8 – 11	EA 1000	10.0	5.7
50 – 70	12 – 14	EA 1500	15.0	5.9
50 – 70	12 – 14	EA 2000	20.0	6.4
95	14 – 16	EA 95-2000	20.0	6.4
<b>Rolling suspension clamp</b>				
–	–	CA 1500-2	15.0	2.0
–	–	CA 1500/2000	20.0	2.3

NOTE For brackets and hooks see pages 44 and 45.

قلم شماره 13:  
مشخصات تخنیکي تجهيزات اصلاح شبكات



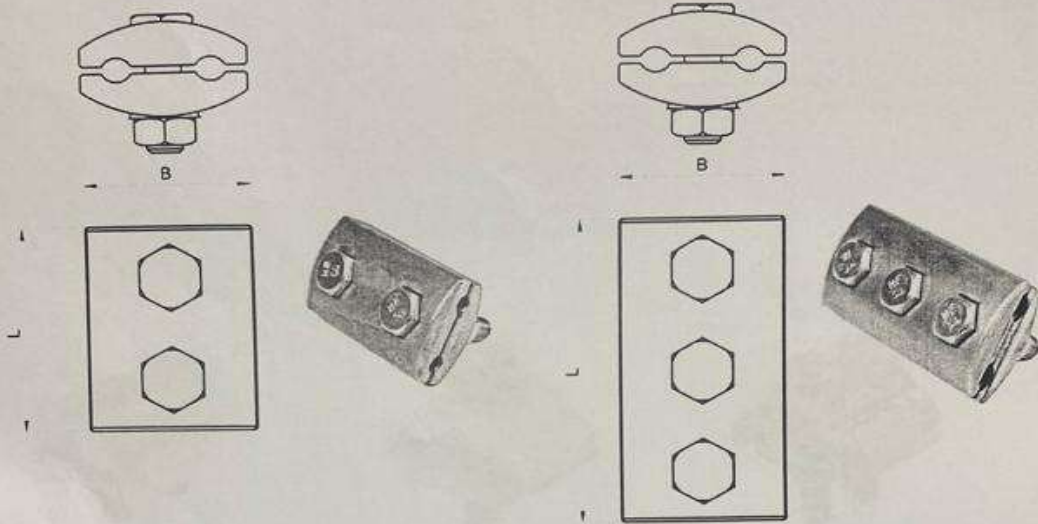
**A L- ACSR - Tension Clamp**

Standard	GB
Usage	Line Fittings
Type	Tension Clamp
Conductor Range	1x(50-120 )mm2
Application	M- Voltage 20-24 kv
Materials	Cast iron



## قلم شماره 14:

Tip: MAIAIS  
Materijal: Al legura DIN 226  
Standard: DIN 48 075



AlAl Groove Clamps are used to joint two parallel aluminum alloy conductors (AAAC), aluminum conductors steel reinforced (ACSR) or ends of ABC of the same or similar cross sections from which the insulation has been removed. Their technical characteristics enable jointing of phase conductors at the places where high tensile strength and stiffness is required (joint done in accordance with Standard DIN 48 075). 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.

29.01.1444  
ع. کلد

قلم شماره 14  
سگست سنجی تجهیزات اعلی سگست



**Table: Surge Arrester**

Designation	Unit	Required	Offered
Manufacturer	-	-	
Country of origin	-		
Type	-	station metal oxide gapless	
Housing	-	silicon rubber	
Color	-	grey	
<b>Nominal characteristics</b>	-		
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	
<b>Protection characteristics</b>			
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	
<b>Operating performances</b>			
High current impulse withstand (4/10 µs)	kA	100	
Temporary over voltage withstand (for 10s)	kV	24	

**Table: Surge Arrester**

Designation	Unit	Required	Offered
<b>Insulation levels</b>			
- 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	-	
<b>Pressure relief capacity</b>			
- Current amplitude (rms)	KA	17.5	
- X/R, asymmetry factor	-	17	
- Current duration	s	0.2	
<b>Weights and dimensions:</b>			
- Arrester height	mm	-	
- Arrester diameter	mm	-	
- Weight	kg	-	
<b>Accessories</b>			
Mounting hardware	-	Yes	
Ground Connector	-	Yes	
Insulating bases	-	Yes	
Discharge counter	-	-	
HV terminals connectors	-	Yes	
<b>Standards</b>	-	IEC 60099-4	
<b>Quality control</b>	-	ISO 9001	
<b>Installation</b>	-	Outdoor	

**Table 2 – General specifications**

Property	Test method	Limits	
		Transformer oil	Low temperature switchgear oil
<b>1 – Function</b>			
Viscosity at 40 °C	ISO 3104	Max. 12 mm <sup>2</sup> /s	Max. 3,5 mm <sup>2</sup> /s
Viscosity at –30 °C <sup>a</sup>	ISO 3104	Max. 1 800 mm <sup>2</sup> /s	--
Viscosity at –40 °C <sup>b</sup>	IEC 61868	--	Max. 400 mm <sup>2</sup> /s
Pour point <sup>a</sup>	ISO 3016	Max. –40 °C	Max. –60 °C
Water content	IEC 60814	Max. 30 mg/kg <sup>c</sup> / 40 mg/kg <sup>d</sup>	
Breakdown voltage	IEC 60156	Min. 30 kV / 70 kV <sup>e</sup>	
Density at 20 °C	ISO 3675 or ISO 12185	Max. 0,895 g/ml	
DDF at 90°C	IEC 60247 or IEC 61620	Max. 0,005	
<b>2 – Refining/stability</b>			
Appearance	--	Clear, free from sediment and suspended matter	
Acidity	IEC 62021-1	Max. 0,01 mg KOH/g	
Interfacial tension	ISO 6295	No general requirement <sup>f</sup>	
Total sulfur content	BS 2000 Part 373 or ISO 14596	No general requirement	
Corrosive sulfur	DIN 51353	Not corrosive	
Antioxidant additive	IEC 60666	(U) uninhibited oil: not detectable (T) trace inhibited oil: max. 0,08 % (I) inhibited oils: 0,08 – 0,40 %	
2-Furfural content	IEC 61198	Max. 0,1 mg/kg	
<b>3 – Performance</b>			
Oxidation stability <sup>1</sup>	IEC 61125 (method C) Test duration: (U) Uninhibited oil: 164 h (T) Trace inhibited oil:332 h (I) Inhibited oil: 500 h		
- Total acidity		Max. 1,2 mg KOH/g <sup>1</sup>	
- Sludge		Max. 0,8 % <sup>1</sup>	
DDF at 90 °C	IEC 60247	Max. 0,500 <sup>1</sup>	
Gassing	IEC 60628, A	No general requirement	
<b>4 – Health, safety and environment (HSE)</b>			
Flash point	ISO 2719	Min. 135 °C	Min. 100 °C
PCA content	BS 2000 Part 346	max. 3 %	
PCB content	IEC 61619	Not detectable	
<sup>a</sup> This is the standard LCSET for an transformer oil (see 5.1) and can be modified depending on the climatic condition of each country. Pour point should be minimum 10 K below LCSET.			
<sup>b</sup> Standard LCSET for low temperature switch gear oil.			
<sup>c</sup> For bulk supply.			
<sup>d</sup> For delivery in drums and IBC.			
<sup>e</sup> After laboratory treatment (see 6.4).			
<sup>f</sup> Where it is used as a general requirement, a limit of minimum 40 mN/m is recommended.			



**GENERAL:**

PANEL NAME: METER BOX 6 METERS

LOCATION: ☐ INDOOR ☒ OUTDOOR

MOUNTING: ☐ SURFACE ☐ PAD  
☒ POLE MOUNTED

CABLE ENTRY & ACCESS	INCOMING	OUTGOING
TOP ENTRY	<input type="checkbox"/>	<input type="checkbox"/>
BOTTOM ENTRY	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FRONT ACCESS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
REAR ACCESS	<input type="checkbox"/>	<input type="checkbox"/>

**ELECTRICAL:**

RATED SERVICE VOLTAGE : ☐ 380V ☒ 400V

RATED CURRENT : ☒ 100A

SHORT CIRCUIT CURRENT : ☒ --kA

RATED FREQUENCY : 50 Hz AC

PHASE : ☒ 3 $\phi$  ☐ 1 $\phi$

**SUPPLY OF AUXILIARIES:**

AUXILIARY CIRCUITS	VOLTAGE	SOURCE		
		AUX. TRANSF	BUSBAR	EXT
CONTROL	230V AC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SIGNALING	230V AC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HEATERS	230V AC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24V DC SUPPLY	24V DC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(\*) 24V DC SUPPLY FROM EXTERNAL

NOTE : Supply Of Auxiliaries Are Not Necessary.

**ENCLOSURE:**

ENCLOSURE SIZE (mm) 850(h) X 555(w) X 180(d)  
GEAR PLATE (mm) 800(h) X 550(w)  
ENCLOSURE SYSTEM ☒ FIXED ☐ WITHDRAWABLE

DEGREE OF PROTECTION ☐ IP43 ☒ NEMA 3R/IP54

☐ NEMA 12/IP52

EXTENDABLE ☐ YES ☒ NO

ACCESS CLOSING ☒ PLAIN DOOR ☐ REAR COVER

☐ PARTIAL DOOR ☐ REAR DOOR

☐ FRONT COVER WITH DOOR

INTERNAL PAINT FINISH ☒ RAL 7032

EXTERNAL PAINT FINISH ☒ RAL 7032

THICKNESS SHEET 1.5 mm STEEL SHEET/PRE-GALVANIZE SHEET

**APPARATUS:**

TYPE OF DEVICES	INCOMING	OUTGOING
FIXED	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
PLUG-IN	<input type="checkbox"/>	<input type="checkbox"/>
DRAW-OUT	<input type="checkbox"/>	<input type="checkbox"/>

**BUSBARS:**

NEUTRAL BUSBAR SIZE: (15 x 03)mm<sup>2</sup>

☒ IDENTIFICATION ☒ A, B, C, N : RED, YELLOW, BLUE, BLACK

☒ EARTH :  $\frac{1}{2}$  , YELLOW / GREEN

**CONNECTIONS:**

INTER CONNECTION ☐ COPPER FLAT BARS  
☒ FLEXIBLE COPPER WIRES

**LABELS:**

LABELS ARE GRAY & BLACK  
GRAY BACKGROUND  
BLACK LETTERS IN ENGLISH

☒ TRAFFOLYTE  
☒ FIXATION BY RIVET  
☒ ALUMINIUM  
☐ ADHESIVE  
☐ FIXATION BY SCREWS & UNITS

**INCOMING**

QTY	RATING	TYPE	PHASE	Icu(KA)
01	100A MCB	C	3	6

**OUTGOING**

QTY	RATING	TYPE	PHASE	Icu(KA)
06	32A MCB	C	1	6

**NOTE:** Where this page offers a choice, only those options  
marked "☑" shall be valid.



DATE:	SUBMITTED BY:	CUSTOMER:

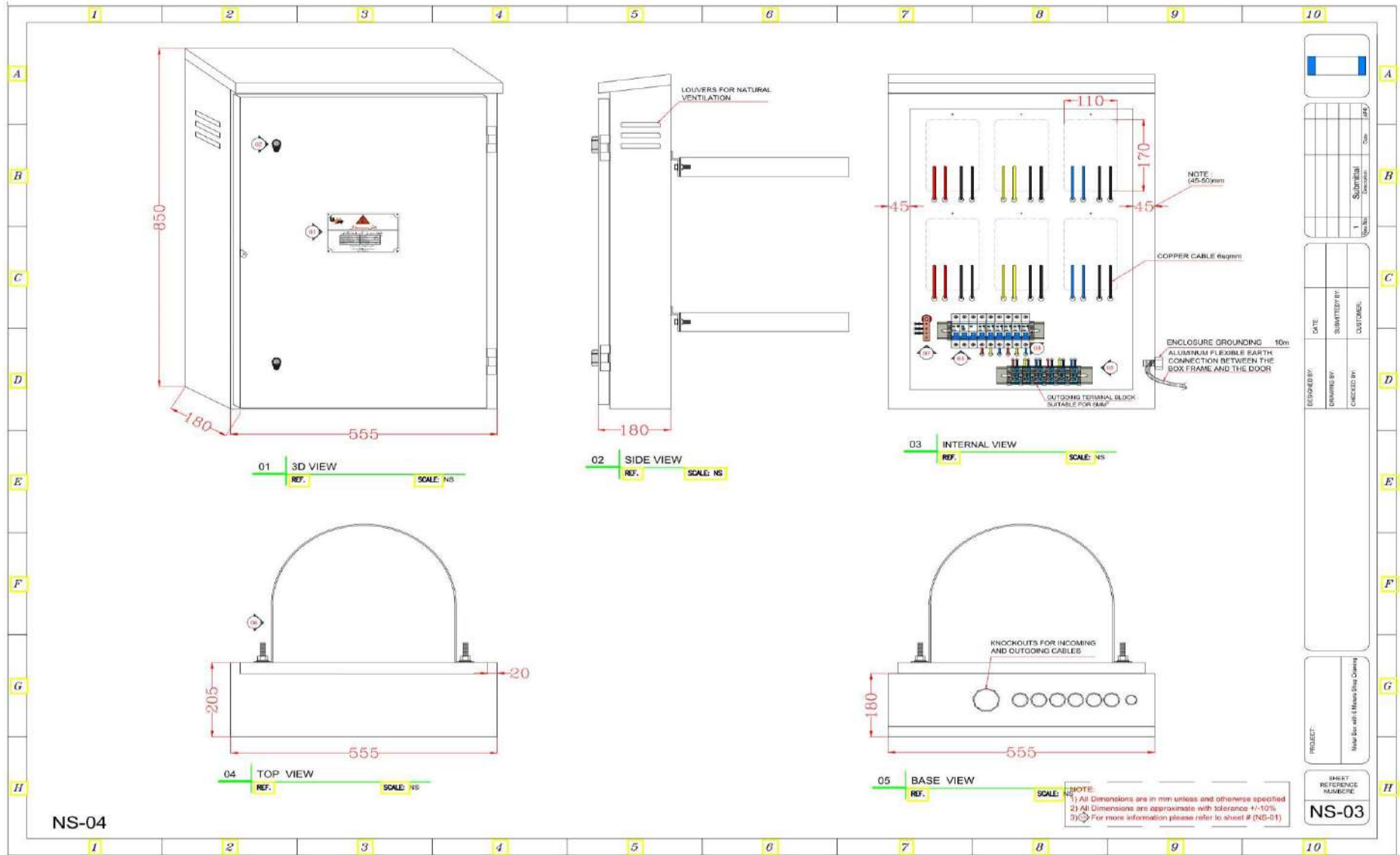
DESIGNED BY:	DRAWING BY:	CHECKED BY:

PROJECT:	Model Box with 6 Meters Strip Opening

PROJECT:	Model Box with 6 Meters Strip Opening

SHEET  
REFERENCE  
NUMBER  
**NS-02**







قلم شماره 16 : مشخصات تخنیکي تجهيزات اصلاح شبكات

Sr.No	Technical Specifications of Electrical Equipments			
1	فیوز کارڈ کی 100/160A			
	Standard	IEC 60269-1:2005		
	Dimension Standard	DIN 43620		
	Rated current	100A		
	Base Rated Current	160A		
	Voltage	0.4kV		
	Breaking Capacity	100kA		
	Type	Low voltage knife Fuse		
	Fuse Bases	Ceramic insulation with Galvanic ally silver Plated Contacts		
	OEM	YES		
2	فیوز کارڈ کی معہ تخت آن 400/500A			
	Standard	IEC-60269-1:2005		
	Type	Low Voltage Knife Fuse		
	Fuse Base	Ceramic Insulation with Galvanic ally silver Plated Contacts		
	Current Rating	400A		
	Base Current Rating	500A		
	Voltage Rating	0.4kV		
	Breaking Capacity	120kA		
	OEM	YES		
3	فیوز کارڈ کی معہ تخت آن 250/300A			
	Standard	IEC-60269-1:2005		
	Type	Low Voltage Knife Fuse		
	Fuse Base	Ceramic Insulation with Galvanic ally silver Plated Contacts		
	Current Rating	250A		

	Base Current Rating	300A	
	Voltage Rating	0.4kV	
	Breaking Capacity	120kA	
	OEM	YES	