

**TENDER FOR SUPPLY OF TRANSMISSION LINE INSULATORS
132KV, 220KV & 400KV**

Guaranteed Technical Parameters for
Transmission line Insulators: 132kV, 220kV & 400kV

1. TECHNICAL DATASHEETS FOR INSULATORS AND FITTINGS

132 kV OVERHEAD LINE		UNIT	DATA	
INSULATORS FOR LYNX CONDUCTOR			Required	Offered
1.0	INSULATOR			
1.1	Insulator units: Long Rod			
1.1.1	Suspension units			
1.1.1.1	Shed profile		aerodynamic	
1.1.1.2	Appropriate IEC Number		IEC 61109	
1.1.1.3	Material		Silicon Rubber	
1.1.1.4	Coupling a. Standard b. Type (recommended only) c. Size (recommended only)		IEC 60120 Ball/Socket 16	
1.1.1.5	Minimum failing load	kN	120	
1.1.1.6	Outside diameter:	mm	To be provided	
1.1.1.7	Mass of unit	kg	To be provided	
1.1.1.8	Minimum dry lightning impulse withstand	kV	145	
1.1.1.9	Minimum wet power frequency withstand	kV	275	
1.1.1.10	Creepage distance	mm	3700	
1.1.2	Tension units			
1.1.2.1	Shed profile		aerodynamic	
1.1.2.2	Appropriate IEC Number		IEC 61109	
1.1.2.3	Material		Silicone rubber	
1.1.2.4	Coupling a. Standard b. Type (recommended only) c. Size (recommended only)		IEC 61120 Ball/Socket 20	
1.1.2.5	Minimum failing load	kN	120	
1.1.2.6	Outside diameter:	mm	To be provided	
1.1.2.7	Mass of unit	kg	To be provided	
1.1.2.8	Minimum dry lightning impulse withstand	kV	145	
1.1.2.9	Minimum wet power frequency withstand	kV	275	

132 kV OVERHEAD LINE		UNIT	DATA	
INSULATORS FOR LYNX CONDUCTOR			Required	Offered
1.1.2.10	Creepage distance	mm	3700	
1.2	Insulator sets complete			
1.2.1	Suspension sets			
1.2.1.1	Number of insulator strings in parallel		2	
1.2.1.2	Minimum failing load, complete set	kN	70/100	
1.2.1.3	Overall length of insulator	mm	1480	
1.2.1.4	Arcing Gap	mm	1250	
1.2.1.5	Mass of set, complete with all fittings	kg	To be provided	
1.2.1.6	Overall length of creepage path per string:	mm	3700	
1.2.1.7	50 Hz voltage tests: #			
	a. Dry withstand voltage of complete set:	kV	145	
	b. One minute wet withstand voltage of complete set :	kV	275	
1.2.1.8	50% Impulse withstand: #			
	a. 1.2/50 μ s negative wave:	kV	650	
	b. 1.2/50 μ s positive wave:	kV	650	
1.2.1.9	Corona test voltage	-	-	
1.2.1.10	Set RI test voltage	kV	275	
1.2.1.11	Set radio noise level	dB	45	
1.2.2.12	Short circuit current withstand for 1 second (any part of set)	kA	31.5	
1.2.2	Tension sets			
1.2.2.1	Number of insulator strings in parallel		2	
1.2.2.2	Elastic limit load of set fittings:			
	a. Common to each string	kN	To be provided	
	b. Common to conductor	kN	To be provided	
	c. Separate for each sub-conductor	kN	To be provided	
1.2.2.3	Minimum failing load, complete set	kN	2 x 120	
1.2.2.4	Overall length of insulator	mm	1480	

132 kV OVERHEAD LINE		UNIT	DATA	
INSULATORS FOR LYNX CONDUCTOR			Required	Offered
1.2.2.5	Arcing Gap	mm	1200	
1.2.2.6	Mass of set, complete with all fittings	kg	To be provided	
1.2.2.7	Overall length of creepage path per string:	mm	3700	
1.2.2.8	50 Hz voltage tests: #			
	a. Dry withstand voltage of complete set:	kV	650	
	b. One minute wet withstand voltage of complete set:	kV	650	
1.2.2.9	50% Impulse withstand: #			
	a. 1.2/50 μs negative wave:	kV	650	
	b. 1.2/50 μs positive wave:	kV	650	
1.2.2.10	Corona test voltage	kV	-	
1.2.2.11	Set RI test voltage	kV	275	
1.2.2.12	Set radio noise level	dB	45	
1.2.2.13	Short circuit current withstand for 1 second (any part of set)	kA	31.5kA	
1.3	Earth conductor sets			
1.3.1	Minimum failing load			
	a. Suspension set	kN	To be provided	
	b. Tension set	kN	To be provided	
1.3.2	Short circuit current withstand for 1 second (any part of set)	kA	31.5	

All flashover and withstand voltage levels corrected to normal temperature and pressure in accordance with IEC 60383

220 kV OVERHEAD LINE		UNIT	DATA	
INSULATORS FOR CANARY CONDUCTOR			Required	Offered
	Insulator			
1.1	Insulator units: Long Rod			
1.1.1	Suspension units			
1.1.1.1	Shed profile		aerodynamic	
1.1.1.2	Appropriate IEC Number		IEC 61109	
1.1.1.3	Material		Silicone rubber	
1.1.1.4	Coupling			
	a. Standard		IEC 61120	
	b. Type (recommended only)		Ball/Socket	
	c. Size (recommended only)		16	
1.1.1.5	Minimum failing load	kN	70	
1.1.1.6	Outside diameter:	mm	To be provided	
1.1.1.7	Mass of unit	kg	To be provided	
1.1.1.8	Minimum dry lightning impulse withstand	kV	715	
1.1.1.9	Minimum wet power frequency withstand	kV	540	
1.1.1.10	Creepage distance	mm	9500	
1.1.2	Tension units			
1.1.2.1	Shed profile		aerodynamic	
1.1.2.2	Appropriate IEC Number		IEC 61109	
1.1.2.3	Material		Silicone rubber	
1.1.2.4	Coupling			
	a. Standard		IEC 61120	
	b. Type (recommended only)		Ball/Socket	

220 kV OVERHEAD LINE		UNIT	DATA	
INSULATORS FOR CANARY CONDUCTOR			Required	Offered
	Insulator			
	c. Size (recommended only)		16	
1.1.2.5	Minimum failing load	kN	120	
1.1.2.6	Outside diameter:	mm	To be provided	
1.1.2.7	Mass of unit	kg	To be provided	
1.1.2.8	Minimum dry lightning impulse withstand	kV	715	
1.1.2.9	Minimum wet power frequency withstand	kV	540	
1.2.1.10	Creepage distance	mm	9500	
1.2	Insulator sets complete			
1.2.1	Suspension sets			
1.2.1.1	Number of insulator strings in parallel		2	
1.2.1.2	Minimum failing load, complete set	kN	70 / 2*70	
1.2.1.3	Overall length of insulator	mm	2539	
1.2.1.4	Arcing Gap	mm	2100	
1.2.1.5	Mass of set, complete with all fittings	kg	To be provided	
1.2.1.6	Overall length of creepage path per string:	mm	9300	
1.2.1.7	50 Hz voltage tests: #			
	a. Dry withstand voltage of complete set:	kV	715	
	b. One minute wet withstand voltage of complete set :	kV	540	
1.2.1.8	50% Impulse withstand: #			
	a. 1.2/50 μ s negative wave:	kV	1150	
	b. 1.2/50 μ s positive wave:	kV	1150	
1.2.1.9	Corona test voltage	kV	245	
1.2.1.10	Set RI test voltage	kV	220	
1.2.1.11	Set radio noise level	dB	45	
1.2.2.12	Short circuit current withstand for 1 second (any part of set)	kA	31.5	

220 kV OVERHEAD LINE		UNIT	DATA	
INSULATORS FOR CANARY CONDUCTOR			Required	Offered
	Insulator			
1.2.2	Tension sets			
1.2.2.1	Number of insulator strings in parallel		2	
1.2.2.2	Minimum failing load, complete set	kN	120/2*120	
1.2.2.3	Overall length of insulator	mm	2539	
1.2.2.4	Arcing Gap	mm	2100	
1.2.2.5	Mass of set, complete with all fittings	kg	To be provided	
1.2.2.6	Overall length of creepage path per string:	mm	9500	
1.2.2.7	50 Hz voltage tests:			
	a. Dry withstand voltage of complete set:	kV	715	
	b. One minute wet withstand voltage of complete set:	kV	540	
1.2.2.8	50% Impulse withstand: #			
	a. 1.2/50 μ s negative wave:	kV	1150	
	b. 1.2/50 μ s positive wave:	kV	1150	
1.2.2.9	Corona test voltage	kV	245	
1.2.2.10	Set RI test voltage	kV	220	
1.2.2.11	Set radio noise level	dB	45	
1.2.2.12	Short circuit current withstand for 1 second (any part of set)	kA	31.5	
1.3	Earth conductor sets			
1.3.1	Minimum failing load			
	a. Suspension set	kN	To be provided	
	b. Tension set	kN	To be provided	
1.3.2	Short circuit current withstand for 1 second (any part of set)	kA	31.5	

All flashover and withstand voltage levels corrected to normal temperature and pressure in accordance with IEC 60383

400kV OVERHEAD LINE		UNIT	DATA	
INSULATORS FOR LARK CONDUCTOR			Required	Offered
1.0	Insulators			
1.1	Type of Insulator units		Long rod polymeric insulator	
1.1.1	Suspension units			
1.1.1.1	Shed profile		Aerodynamic, Compression (One- piece) moulding type	
1.1.1.2	Appropriate IEC Number		IEC 61109	
1.1.1.3	Material		High temperature vulcanization silicone elastomer	
1.1.1.4	Coupling			
	a. Standard applied		IEC 60120	
	b. Type		Ball/Socket	
	c. Size (recommended only)	mm	16	
1.1.1.5	Minimum failing load of unit	kN	160	
1.1.1.6	Outside diameter:		To be provided	
1.1.1.7	Mass of unit		To be provided	
1.1.1.8	Minimum dry lightning impulse withstand voltage (1.2/50 μs, negative)	kV	1550	
1.1.1.9	Minimum dry lightning impulse withstand voltage (1.2/50 μs, positive)	kV	1550	
1.1.1.10	Minimum dry power frequency withstand voltage (1 min.)	kV	845	
1.1.1.11	Minimum wet power frequency withstand voltage (1 min.)	kV	680	
1.1.1.12	Creepage distance	mm	16000	
1.1.2	Tension units			
1.1.2.1	Shed profile		Aerodynamic, Compression (One- piece) moulding type	
1.1.2.2	Appropriate IEC Number		IEC 61109	
1.1.2.3	Material		High temperature vulcanization silicone elastomer	
1.1.2.4	Coupling			
	a. Standard		IEC 60120	
	b. Type		Ball/Socket	

400kV OVERHEAD LINE		UNIT	DATA	
INSULATORS FOR LARK CONDUCTOR			Required	Offered
	c. Size (recommended only)	mm	16	
1.1.2.5	Minimum failing load	kN	320	
1.1.2.6	Outside diameter	mm	To be provided	
1.1.2.7	Mass of unit	kg	To be provided	
1.1.2.8	Minimum dry lightning impulse withstand voltage (1.2/50 μs, negative)	kV	1550	
1.1.2.9	Minimum dry lightning impulse withstand voltage (1.2/50 μs, positive)	kV	1550	
1.1.2.10	Minimum dry power frequency withstand voltage (1 min.)	kV	845	
1.1.2.11	Minimum wet power frequency withstand voltage (1 min.)	kV	690	
1.1.2.12	Creepage distance	mm	16000	
1.2	Insulator set complete			
1.2.1	Suspension sets			
1.2.1.1	Number of insulator strings in parallel		2	
1.2.1.2	Minimum failing load, complete set	kN	160	
1.2.1.3	Overall length of insulator	mm	3896	
1.2.1.4	Arcing Gap (recommended only)	mm	2900	
1.2.1.5	Mass of set, complete with all fittings	kg	To be provided	
1.2.1.6	Overall length of creepage path per string	mm	16000	
1.2.1.7	50 Hz voltage tests All withstand voltage levels corrected from 2500 m altitude at site to test voltages under normal temperature and pressure in accordance with BS 137 and IEC 60383.			
	a. One minute dry withstand voltage of complete set	kV	845	
	b. One minute wet withstand voltage of complete set	kV	690	
1.2.1.8	50% Impulse withstand voltage tests All withstand voltage levels corrected from 2500 m altitude at site to test voltages under normal temperature and pressure in accordance with BS 137 and IEC 60383.			
	a. 1.2/50 μs negative wave:	kV	1550	

400kV OVERHEAD LINE		UNIT	DATA	
INSULATORS FOR LARK CONDUCTOR			Required	Offered
	b. 1.2/50 μs positive wave:	kV	1550	
1.2.1.9	Corona test voltage	kV	333	
1.2.1.10	Set RI test voltage	kV	275	
1.2.1.11	Set radio noise level	dB	45	
1.2.1.12	Short circuit current withstand for 1 sec	kA	31.5	
1.2.2	Tension sets			
1.2.2.1	Number of insulator strings in parallel		2	
1.2.2.2	Elastic limit load of set fittings:			
	a. Common to each string	kN	To be provided	
	b. Common to conductor	kN	To be provided	
	c. Separate for each sub-conductor	kN	To be provided	
1.2.2.3	Minimum failing load, complete set	kN	2 x 160	
1.2.2.4	Overall length of insulator	mm	3896	
1.2.2.5	Arcing Gap (recommended only)	mm	2900	
1.2.2.6	Mass of set, complete with all fittings	Kg	To be provided	
1.2.2.7	Overall length of creepage path per string	mm	16000 mm	
1.2.2.8	50 Hz voltage tests All withstand voltage levels corrected from 2500 m altitude at site to test voltages under normal temperature and pressure in accordance with BS 137 and IEC 60383.			
	a. One minute dry withstand voltage of complete set	kV	845	
	b. One minute wet withstand voltage of complete set	kV	690	
1.2.2.9	50% Impulse withstand voltage tests. All withstand voltage levels corrected from 2500 m altitude at site to test voltages under normal temperature and pressure in accordance with BS 137 and IEC 60383.			
	a. 1.2/50 μs negative wave:	kV	1550	
	b. 1.2/50 μs positive wave:	kV	1550	
1.2.2.10	Corona test voltage	kV	333	
1.2.2.11	Set RI test voltage	kV	275	
1.2.2.12	Set radio noise level	dB	45	

400kV OVERHEAD LINE		UNIT	DATA	
INSULATORS FOR LARK CONDUCTOR			Required	Offered
1.2.3	Earth conductor sets			
1.2.3.1	Minimum failing load			
	a. Suspension set	kN	To be provided	
	b. Tension set	kN	To be provided	
1.2.3.2	Short circuit current withstand for 1 second	kA	31.5	