**Technical specification for** **110kV disconnectors**

The technical offer must be prepared according to the substation single-line diagram, which can be found in the substations design order or as a separate document.

## Technical requirements

| **Description:** | **Required** | **Offered** |
| --- | --- | --- |
| Quantity of horizontal centre-break motor driven disconnector without earthing switch | According to  substation single line  diagram |  |
| Quantity of horizontal centre-break motor driven disconnector with motor driven earthing switch on one side quantity | According to  substation single line  diagram |  |
| Rated voltage *(Ur)* | ≥ 123kV |  |
| Rated frequency *(fr)* | 50 Hz |  |
| Rated continuous current *(Ir)* | According to substation single-line diagram, but not less than 1600A |  |
| Rated short time withstand current *(Ik)* | According to substation single-line diagram, but not less than 20 kA at tk=3s |  |
| Rated peak withstand current *(Ip)* | ≥ 50 kA |  |
| Rated power frequency withstand voltage *(Ud)* to earth and between phases | ≥ 230 kV |  |
| Rated power frequency withstand voltage *(Ud)* across isolating distance | ≥ 265 kV |  |
| Rated lightning impulse withstand voltage *(Up)* to earth and between phases | ≥ 550 kV |  |
| Rated lightning impulse withstand voltage *(Up)* across isolating distance | ≥ 630 kV |  |
| Creepage distance (phase - ground) | ≥ 43.3 mm / kV |  |
| Ambient air temperature range | -40°C up to +40°C |  |
| Intended for out-door installation | yes |  |
| Mechanical endurance class for disconnectors | M1 |  |
| Electrical endurance class for earthing switches | E0 |  |
| Flat primary terminals with 4 drillholes positioned in square | yes |  |
| Distance between hole centres of terminals | 45 × 45 mm |  |
| Distance between pole centres | 2000 mm |  |
| Main contacts made of copper, with a silver-plated surface | yes |  |
| Porcelain insulator and flange juncture covered with silicone layer | yes |  |
| Porcelain insulators C6-550II should be manufactured in European union | yes |  |
| Length of porcelain insulator C6-550II | 1220 mm |  |
| Base rotary unit should be with two bearings inside | yes |  |
| Current path contact (rotary) heads made from one piece of cast aluminium alloy | yes |  |
| Earthing switch contact arms (pipes) should be painted or glued with red and white adhesive film in five bands (white/red/white/red/white).   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  |  |  |  |  | | yes |  |
| Without steel supporting structures | yes |  |
| Pole columns with insulators should be mounted at the factory on hot dip galvanised base frame including all supporting elements | yes |  |
| Mechanical and electrical interlocking between disconnector and earthing switch. Mechanical locking must be realized at open position of disconnector and motor drive must be switched off  Whenever the crank is inserted in the drive mechanism, it shall be impossible to operate the device electrically. | yes |  |
| With dead-centre interlock | yes |  |
| One operating mechanism for three poles operating | yes |  |
| Control voltage for motor | 110 V DC |  |
| Auxiliary voltage for heating of operating mechanisms | 230 V AC |  |
| Motor protection by MCB | yes |  |
| Operating mechanism with limit switch for emergency hand operation | yes |  |
| Pushbuttons or switch “on/off” for local operation | yes |  |
| Selector switch “local/remote/off” for control variations | yes |  |
| Lettering on pushbuttons and switches should be in Latvian language | yes |  |
| Terminals for control and motor circuit, earthing and shield | yes |  |
| Disconnectable secondary terminal blocks (e.g., Phoenix URTK) | yes/please specify |  |
| Free auxiliary contacts | ≥ 10 NO, ≥ 10 NC, 1 W |  |
| Contacts for electrical interlocking | yes |  |
| Marking of all internal wiring in operating mechanism should be made | yes |  |
| Operating mechanisms lowered down, fixed to the steel structure | yes |  |
| Operating mechanisms for disconnector and earthing switch should be located under side pole | yes |  |
| Operating mechanism for disconnector should be located at opposite side of main contacts opening direction | yes |  |
| Operating mechanisms situated in lockable non-corroding cast aluminium or stainless-steel boxes with air vent | yes/please specify |  |
| Secondary cable gland plate undrilled, at the bottom of operating  mechanism box | yes |  |
| Degree of protection for operating mechanism boxes | ≥ IP-54 |  |
| Door locking with butterfly nut and possibility for padlock | yes |  |
| With necessary crank handles | yes |  |
| To the tender should be attached operating, maintenance and installation manuals in Latvian or English and preliminary drawing of offered equipment (only in electronic format) | yes |  |
| Disconnectors must be designed, type tested and passed routine tests before delivery according to IEC 62271-102 | yes |  |
| All nameplates in Latvian | yes |  |
| **Informative part** | **See below** |  |
| Manufacturer of disconnectors | please indicate |  |
| Type No. of disconnector without earthing switch | please specify |  |
| Type No. of disconnector with earthing switch | please specify |  |
| Type of operating mechanism | please specify |  |
| Country of origin | please specify |  |
| Straight load | kN |  |
| Cross load | kN |  |
| Anti-condensation heating via thermal relay (if applicable) | W |  |
| Anti-condensation permanent heating | W |  |

### 2. Spare parts

| **Description** | **Required** | **Offered** |
| --- | --- | --- |
| Electric drive motor of each type | 1 unit |  |
| Heating element | 3 units |  |
| Main contacts for disconnector | 1 set |  |
| Main contacts for earthing switch | 1 set |  |
| Electrical interlocking coil and contacts | 1 set |  |
| Necessary lubricants for installing procedure | yes |  |

1. **Technical documentation**

|  |  |  |
| --- | --- | --- |
| **Description:** | **Required** | **Offered** |
| Operations, Maintenance and Installation manuals in Latvian and English in electronical PDF format | Not later than two months before delivery of equipment |  |
| Preliminary drawings of disconnector in electronical PDF format:  Dimensional drawing  Rating plate drawing  Electrical diagram of operating mechanism | Within 60 days after signing of Contract |  |
| The corrected drawings of disconnector in electronical PDF format:  Dimensional drawing (also in .dwg format)  Rating plate drawing  Electrical diagram of operating mechanism | Within 14 days after Purchaser’s approval diagrams |  |
| Routine test reports in electronical PDF format | On time of circuit breaker delivery |  |