



TRIDELTA Überspannungsableiter GmbH

Ein Unternehmen der Tridelta Gruppe

Metal oxide surge arrester

Surge arresters for high voltage systems
Type series SB 6/20.4-I to SB 420/20.4-I

Field of application

Protection of transformers, switch-gears and plants against atmospheric and switching overvoltages

Selection of metal oxide surge arresters

The selection of the rated and the continuous operating voltage of the arresters is depending on the neutral performance of the networks. Guidelines for selection: see DIN VDE 0675/part 5 and IEC 60099-5

Design

porcelain housing: brown glazed (grey on inquiry),
fittings: Al alloy
connections: clamps, screws, nuts hot dip galv. or stainless steel

Optional accessories

Monitoring spark gap, surge counter, diagnostic appliance

Operating conditions

| | |
|----------------------|------------------|
| ambient temperature: | -60°C to +55°C |
| rated frequency: | 48 cps to 62 cps |

Technical parameters

| | | | |
|--------------------------------|----------------------|------------------------------|--------------------|
| Rated voltage U_r : | 6 kV to 420 kV | Line discharge class : | 4 |
| nominal discharge current : | 20 kA | rated short circuit current: | 40 to 63 kA |
| high current impulse (4/10) : | 100 kA | specific energy withstand | |
| long duration current impulse: | 1200 A /2000 μ s | acc. to IEC 60099-4: | 9,2 kJ / KV_{Ur} |
| | | double impulse 3000 μ s: | 16 kJ / KV_{Ur} |

Metalloxidableiter

Hochspannungsableiter

Typenreihe SB 6/20.4-I bis SB 420/20.4-I

Anwendungsbereich

Schutz von Transformatoren, Schaltgeräten und Anlagen gegen atmosphärische und Schaltüberspannungen

Metalloxidableiterauswahl

Die Auswahl der Bemessungs- und Dauerspannung der Ableiter ist von der Sternpunktbehandlung der Netze abhängig. Auswahlkriterien siehe DIN VDE 0675/ Teil 5 bzw. IEC 60099-5

Ausführung

Porzellanisolierkörper : braun glasiert (grau auf Anfrage)
Armaturen: Guß AL-Legierung
Verbindungen: Klemmen, Schrauben und Muttern feuerverzink oder CrNi-Stahl

Mögliches Zubehör

Kontrollfunkenstrecken, Ansprechzähler, Diagnoseeinrichtung

Normale Betriebsbedingungen

| | |
|----------------------|-----------------|
| Umgebungstemperatur: | -60°C bis +55°C |
| Netzfrequenz: | 48 Hz bis 62 Hz |

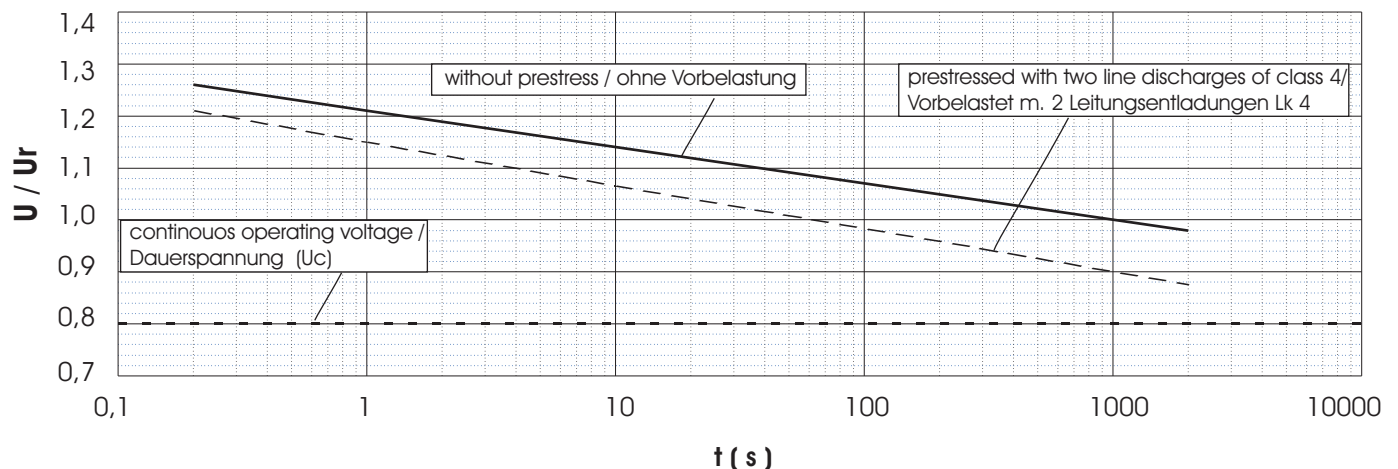
Technische Parameter

| | | | |
|----------------------------|-----------------|------------------------------|--------------------|
| Bemessungsspannung U_r : | 6 kV bis 420 kV | Leitungsentladungsklasse: | 4 |
| Nennableitstoßstrom: | 20 kA | Überlastungsfähigkeit: | 40 bis 63 kA |
| Hochstoßstrom (4/10): | 100 kA | Energieaufnahmevermögen | |
| Rechteckstoßstrom: | 1200 A / 2000 | entspr. IEC 60099-4: | 9,2 kJ / KV_{Ur} |
| | | bei Doppelstoß 3000 μ s: | 16 kJ / KV_{Ur} |

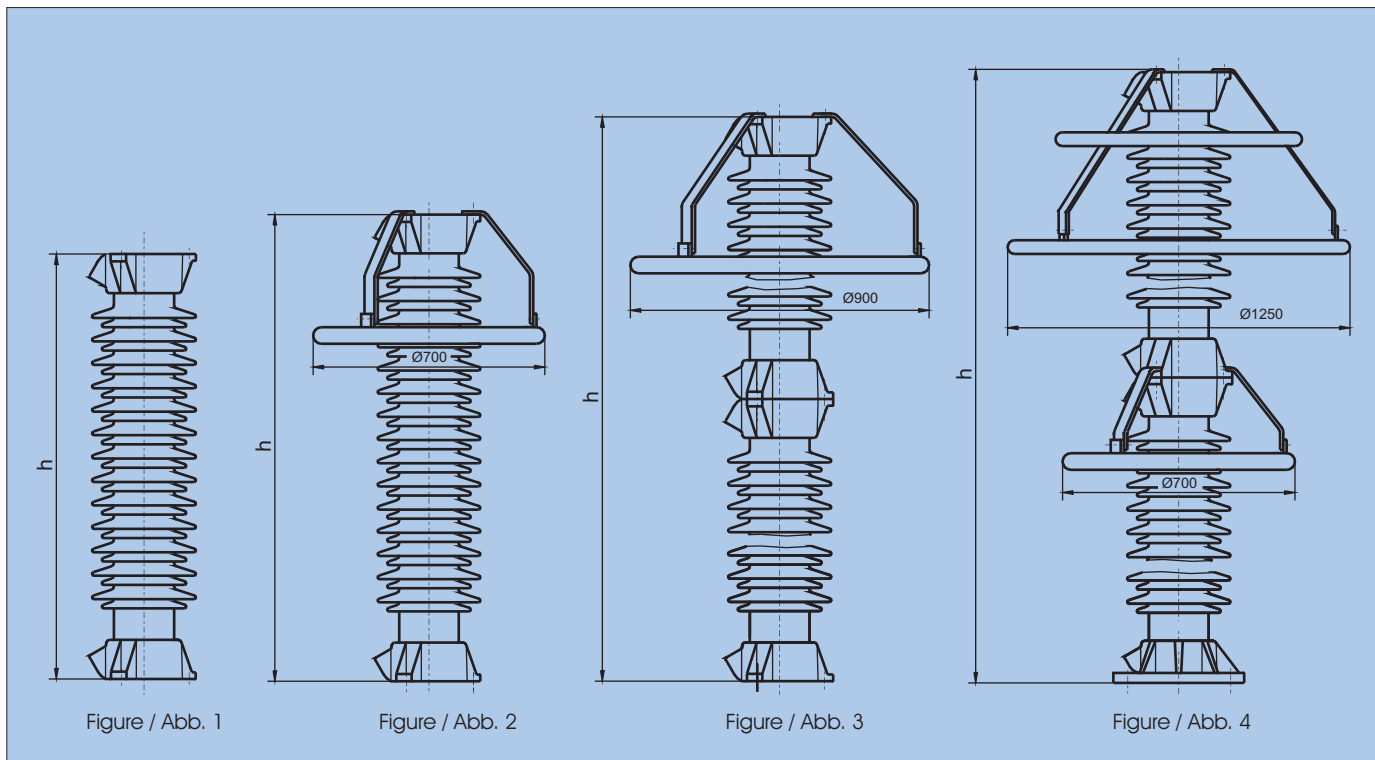
| Type/ Typ | rated voltage/ Bemes- sungs- span- nung Ur kV | continuous operating voltage/ Dauer- spannung Uc kV | temporary overvoltage TOV ¹⁾ / zeitw. Spannungs- überhöhung ¹⁾ | | residual voltage at steep, lightning and switching impulse current / Restspannung bei Steil-, Blitz- und Schaltstoßstrom | | | | | | | | | | min. housing size / min. Ge- häuse |
|---------------|--|---|---|-----------------------------|---|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|---------------------|------|--|
| | | | U _{1 s} kV | U _{10 s} kV | 10 kA (1/2 µs) | 5 kA (8/20 µs) | 10 kA (8/20 µs) | 20 kA (8/20 µs) | 40 kA (8/20 µs) | 250 A (30/70µs) | 500 A (30/70µs) | 1000 A (30/70µs) | 2000 A (30/70µs) | | |
| | | | | | kV | kV | kV | kV | kV | kV | kV | kV | kV | kV | |
| SB 6/20.4-I | 6 | 4,8 | 6,9 | 6,5 | 15,6 | 13,7 | 14,4 | 15,6 | 17,0 | 11,7 | 11,9 | 12,2 | 12,5 | 1 | |
| SB 12/20.4-I | 12 | 9,6 | 13,8 | 12,9 | 31,1 | 27,4 | 28,8 | 31,1 | 34,0 | 23,3 | 23,8 | 24,5 | 25,1 | 1 | |
| SB 18/20.4-I | 18 | 14,4 | 20,7 | 19,4 | 46,7 | 41,0 | 43,2 | 46,7 | 51,0 | 35,0 | 35,6 | 36,7 | 37,6 | 2 | |
| SB 30/20.4-I | 30 | 24,0 | 34,5 | 32,3 | 77,8 | 68,4 | 72,0 | 77,8 | 85,0 | 58,3 | 59,4 | 61,2 | 62,6 | 3 | |
| SB 48/20.4-I | 48 | 38,4 | 55,2 | 51,6 | 124,4 | 109,4 | 115,2 | 124,4 | 135,9 | 93,3 | 95,0 | 97,9 | 100,2 | 4 | |
| SB 60/20.4-I | 60 | 48 | 69 | 65 | 156 | 137 | 144 | 156 | 170 | 117 | 119 | 122 | 125 | 5 | |
| SB 72/20.4-I | 72 | 58 | 83 | 77 | 187 | 164 | 173 | 187 | 204 | 140 | 143 | 147 | 151 | 6 | |
| SB 75/20.4-I | 75 | 60 | 86 | 81 | 194 | 171 | 180 | 194 | 212 | 146 | 149 | 153 | 157 | 6 | |
| SB 78/20.4-I | 78 | 62 | 90 | 84 | 202 | 178 | 187 | 202 | 221 | 151 | 154 | 159 | 163 | 6 | |
| SB 81/20.4-I | 81 | 65 | 93 | 87 | 210 | 184 | 194 | 210 | 229 | 157 | 160 | 165 | 169 | 6 | |
| SB 84/20.4-I | 84 | 67 | 97 | 90 | 218 | 192 | 202 | 218 | 238 | 164 | 167 | 172 | 176 | 6 | |
| SB 90/20.4-I | 90 | 72 | 104 | 97 | 233 | 205 | 216 | 233 | 255 | 175 | 178 | 184 | 188 | 7 | |
| SB 96/20.4-I | 96 | 77 | 110 | 103 | 248 | 219 | 230 | 248 | 271 | 186 | 190 | 196 | 200 | 7 | |
| SB 102/20.4-I | 102 | 82 | 117 | 110 | 265 | 233 | 245 | 265 | 289 | 198 | 202 | 208 | 213 | 7 | |
| SB 108/20.4-I | 108 | 86 | 124 | 116 | 280 | 246 | 259 | 280 | 306 | 210 | 214 | 220 | 225 | 7 | |
| SB 114/20.4-I | 114 | 91 | 131 | 123 | 296 | 260 | 274 | 296 | 323 | 222 | 226 | 233 | 238 | 8 | |
| SB 120/20.4-I | 120 | 96 | 138 | 129 | 311 | 274 | 288 | 311 | 340 | 233 | 238 | 245 | 251 | 8 | |
| SB 123/20.4-I | 123 | 98 | 141 | 132 | 319 | 280 | 295 | 319 | 348 | 239 | 243 | 251 | 257 | 8 | |
| SB 132/20.4-I | 132 | 106 | 152 | 142 | 342 | 301 | 317 | 342 | 374 | 257 | 262 | 269 | 276 | 8 | |
| SB 138/20.4-I | 138 | 110 | 159 | 148 | 357 | 314 | 331 | 357 | 391 | 268 | 273 | 281 | 288 | 8 | |
| SB 144/20.4-I | 144 | 115 | 166 | 155 | 374 | 329 | 346 | 374 | 408 | 280 | 285 | 294 | 301 | 8 | |
| SB 150/20.4-I | 150 | 123 | 173 | 161 | 400 | 352 | 370 | 400 | 437 | 300 | 305 | 315 | 322 | 8 | |
| SB 168/20.4-I | 168 | 134 | 193 | 181 | 435 | 383 | 403 | 435 | 476 | 326 | 332 | 343 | 351 | 9 | |
| SB 186/20.4-I | 186 | 149 | 214 | 200 | 482 | 424 | 446 | 482 | 526 | 361 | 368 | 379 | 388 | 10 | |
| SB 192/20.4-I | 192 | 154 | 221 | 206 | 498 | 438 | 461 | 498 | 544 | 373 | 380 | 392 | 401 | 10 | |
| SB 198/20.4-I | 198 | 158 | 228 | 213 | 513 | 451 | 475 | 513 | 561 | 385 | 392 | 404 | 413 | 11 | |
| SB 210/20.4-I | 210 | 168 | 242 | 226 | 544 | 479 | 504 | 544 | 595 | 408 | 416 | 428 | 438 | 11 | |
| SB 214/20.4-I | 214 | 171 | 246 | 230 | 555 | 488 | 514 | 555 | 607 | 416 | 424 | 437 | 447 | 11 | |
| SB 228/20.4-I | 228 | 182 | 262 | 245 | 591 | 520 | 547 | 591 | 645 | 443 | 451 | 465 | 476 | 2x8 | |
| SB 240/20.4-I | 240 | 192 | 276 | 258 | 622 | 547 | 576 | 622 | 680 | 467 | 475 | 490 | 501 | 2x8 | |
| SB 264/20.4-I | 264 | 211 | 304 | 284 | 685 | 602 | 634 | 685 | 748 | 514 | 523 | 539 | 552 | 2x9 | |
| SB 288/20.4-I | 288 | 230 | 331 | 310 | 746 | 656 | 691 | 746 | 815 | 560 | 570 | 587 | 601 | 2x9 | |
| SB 336/20.4-I | 336 | 269 | 386 | 361 | 870 | 766 | 806 | 870 | 951 | 653 | 665 | 685 | 701 | 2x11 | |
| SB 342/20.4-I | 342 | 274 | 393 | 368 | 887 | 780 | 821 | 887 | 969 | 665 | 677 | 698 | 714 | 2x11 | |
| SB 360/20.4-I | 360 | 288 | 414 | 387 | 933 | 821 | 864 | 933 | 1020 | 700 | 713 | 734 | 752 | 2x11 | |
| SB 366/20.4-I | 366 | 293 | 421 | 393 | 948 | 834 | 878 | 948 | 1036 | 711 | 724 | 746 | 764 | 2x11 | |
| SB 372/20.4-I | 372 | 298 | 428 | 400 | 964 | 848 | 893 | 964 | 1054 | 723 | 737 | 759 | 777 | 2x11 | |
| SB 390/20.4-I | 390 | 312 | 449 | 419 | 1011 | 889 | 936 | 1011 | 1104 | 758 | 772 | 796 | 814 | 2x11 | |
| SB 396/20.4-I | 396 | 317 | 455 | 426 | 1026 | 903 | 950 | 1026 | 1121 | 770 | 784 | 808 | 827 | 2x11 | |
| SB 420/20.4-I | 420 | 336 | 483 | 452 | 1089 | 958 | 1008 | 1089 | 1189 | 816 | 832 | 857 | 877 | 2x11 | |

1) With a prior energy stress of two line discharges of class 4 / Mit Vorbelastung von 2 Leitungsentladungen der Klasse 4

Power frequency voltage versus time characteristic (TOV) (initial temperature +60°C)
Wechselspannungs - Zeit - Kennlinie (TOV) (Ausgangstemperatur +60°C)



| housing size / Gehäusegröße | height / Höhe ≈ h mm | creepage distance / Kriechweg ± 5% mm | weight / Gewicht ≈ m kg | insulation of arrester housing (applied to 1000m a.s.l.) Äußere Isolation | | | figure / Abb. |
|-----------------------------|--------------------------------|---|-----------------------------------|---|-------------------------------------|--|---------------|
| | | | | p.f. withstand voltage (wetted) | lightning impulse withstand voltage | switching impulse withstand voltage (wetted) | |
| | | | | PFWL 50 Hz kV | LIWL 1.2 / 50 kV | SIWL 250/2500 kV | |
| 1 | 470 | 520 | 32 | 60 | 140 | 105 | 1 |
| 2 | 540 | 750 | 38 | 75 | 170 | 130 | 1 |
| 3 | 610 | 980 | 46 | 90 | 205 | 160 | 1 |
| 4 | 680 | 1210 | 54 | 100 | 240 | 185 | 1 |
| 5 | 890 | 1950 | 71 | 145 | 345 | 265 | 1 |
| 6 | 1100 | 2630 | 90 | 190 | 450 | 345 | 1 |
| 7 | 1380 | 3550 | 115 | 250 | 585 | 450 | 1 |
| 8 | 1520 | 4000 | 132 | 280 | 655 | 505 | 1 |
| 9 | 1750 | 4700 | 147 | 285 | 670 | 515 | 2 |
| 10 | 1980 | 5450 | 168 | 315 | 730 | 560 | 2 |
| 11 | 2200 | 6250 | 200 | 360 | 835 | 645 | 2 |
| 12 | 2200 | 6800 | 210 | 360 | 835 | 645 | 2 |
| 13 | 2200 | 7595 | 221 | 360 | 835 | 645 | 2 |
| 2x8 | 3040 | 8000 | 256 | 465 | 1085 | 835 | 3 |
| 2x9 | 3500 | 9400 | 298 | 535 | 1245 | 960 | 3 |
| 2x11 | 4400 | 12500 | 415 | 655 | 1530 | 1175 | 4 |
| 2x12 | 4400 | 13600 | 435 | 655 | 1530 | 1175 | 4 |
| 2x13 | 4400 | 15190 | 457 | 655 | 1530 | 1175 | 4 |

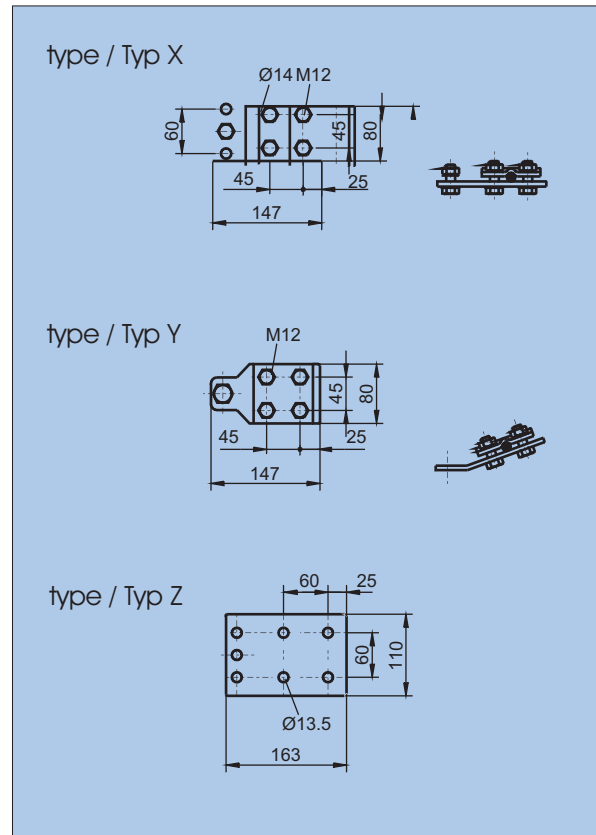
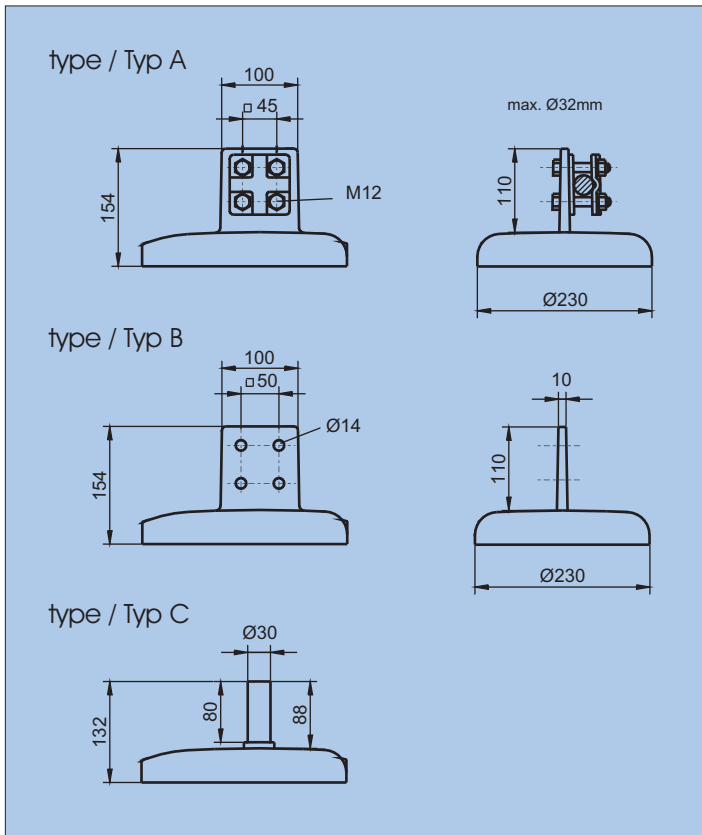


Mechanical withstand acc. to IEC 60099-4 /
Mechanische Daten nach IEC 60099-4

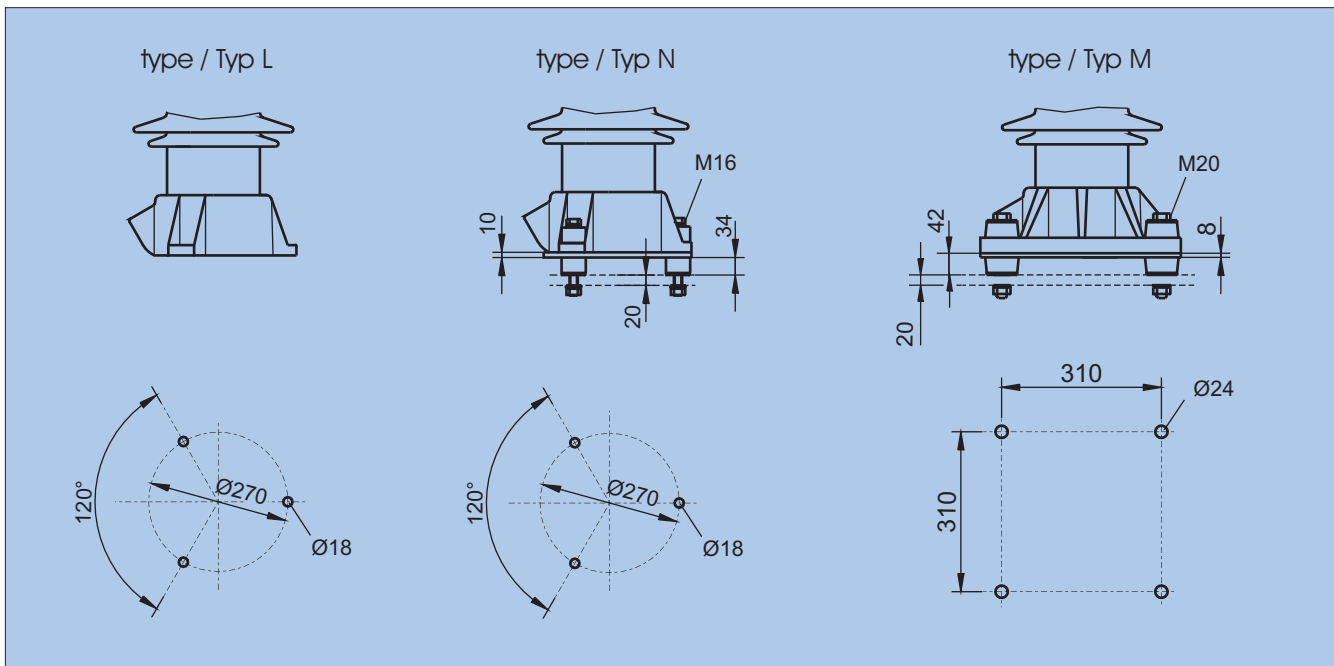
| | Max. permissible dynamic service load/ Max. zulässige dynamische Betriebslast MPDSL | Permissible static service load/ zulässige statische Betriebslast PSSL |
|-------|--|---|
| C 120 | 13380 Nm | 5400 Nm |
| C 130 | 23000 Nm | 9200 Nm |

line terminals / Phasenanschlüsse

earth terminals / Erdanschlüsse



variants of installation and drilling plan / Aufstellvarianten mit Bohrplan



How to order / Bestellbeispiel

| | |
|--|---------------|
| Metal oxide surge arrester with porcelain housing / Metalloxideableiter im Porzellangehäuse | SB 120/20.4-I |
| housing / Gehäuse | 8 |
| line terminal / Phasenanschluß | A |
| variant of installation / Aufstellvariante | N |
| earth terminal / Erdanschluß | X |

Specifications in this leaflet are subject to change without notice. / Wir behalten uns vor, technische Inhalte zu ändern.

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