Switchgear Type 8DJ20
up to 24 kV, Gas-Insulated

Medium-Voltage Switchgear

Catalog HA 45.31 · 2008

www.siemens.com/energy
8DJ20 switchgear is a factory-assembled, type-tested, metal-enclosed switchgear for indoor installation.

**Typical uses**
8DJ20 switchgear is used for power distribution in substations – even under severe environmental conditions, such as:

- Industrial environments
- Damp, sandy or dusty areas
- Simple outdoor substations

**Main uses**
- Compact substations
- Compact transformer substations, e.g. for wind power stations
- Garage and vault substations
- Underground and underfloor substations
- Sidewalk substations, e.g. containing switchgear with a very small overall width – in particular the basic versions of schemes 10, 32 and 71 – in conurbations
- Substations with control aisle

**Technology**
- Switchgear design with up to 5 feeders
- Maintenance-free
- Climate-independent
- Partition class: PM (metallic partition)
- Three-pole primary enclosure, metal-enclosed
- Insulating gas SF₆
- Welded switchgear vessel without seals, made of stainless steel, with welded-in bushings for electrical connections and mechanical components
- Three-position switch-disconnector with load-break and make-proof earthing function
- Cable connection for bushings with outside cone
- Connection with cable plugs
  - In ring-main feeders with bolted contact (M16)
  - In transformer feeders with plug-in contact
- Option: Connection with conventional sealing ends
  - For thermoplastic-insulated cables via elbow adapter AKE 20/630 (make Siemens)
  - For paper-insulated mass-impregnated cables via commercially available adapter systems
- Easy installation

**Personal safety**
- Safe-to-touch and hermetically-sealed primary enclosure
- HV HRC fuses and cable sealing ends are only accessible when outgoing feeders are earthed
- Operation only possible when enclosure is closed
- Logical mechanical interlocking
- Capacitive voltage detecting system to verify safe isolation from supply
- Feeder earthing by means of make-proof earthing switches

**Security of operation**
- Hermetically-sealed primary enclosure independent of environmental effects such as pollution, humidity and small animals – sealed for life:
  - Welded switchgear vessel
  - Welded-in bushings and operating mechanism
- Operating mechanism parts maintenance-free (IEC 62 271-1/ VDE 0671-1)
- Switchgear interlocking system with logical mechanical interlocks

**Cost-efficiency**
Extremely low "life-cycle costs" throughout the entire product service life as a result of:
- Maintenance-free concept
- Climatic independence
- Minimum space requirements
- Maximum availability

**Standards**
see page 21

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The products and systems described in this catalog are manufactured and sold according to a certified quality and environmental management system (acc. to ISO 9001 and ISO 14001).
(DQS Certificate Reg. No. DQS 003473 QM UM). The certificate is accepted in all IQNet countries.

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Our product range extends from switchgear installed in a radial transformer panel (individual panel) to switchgear with 5 feeders, consisting of:

- Ring-main feeders
- Transformer feeders with HV HRC fuse assemblies
- Circuit-breaker feeders (for the complete product range see Supplements to Catalogs HA 45.31/41.11 – 2006)

The switchgear is available in three overall heights:

- 1200 mm (with low subframe)
- 1400 mm and 1760 mm (with high subframe)

These overall heights cover all areas of application, from compact substations to switchgear rooms with control aisle.

### Basic design

- Manual operating mechanism
- Transformer cable connection at the front (standard)
- With logical mechanical interlocks
- With ready-for-service indicator
- With capacitive voltage detecting system at the ring-main feeders

### Options (others on request)

- Capacitive voltage detecting system at the transformer feeders
- Motor operating mechanisms for the three-position switch-disconnectors
- Auxiliary switch for three-position switch-disconnector and make-proof earthing switch
- Short-circuit indicator with built-in housing
- Surge arresters for ring-main feeders
- Shunt releases for transformer feeders
- Secondary equipment for remote operation or remote indication, e.g. with local-remote switch in the case of motor operating mechanisms or "tripped signal" in the case of transformer feeders
- Locking devices
- Closing lock-out
- De-earthing lock-out
- Cable clamps
### Technical Data, Product Range

#### Electrical data, temperature, filling pressure

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage $U_{r}$</td>
<td>7.2</td>
</tr>
<tr>
<td>Rated insulation level</td>
<td></td>
</tr>
<tr>
<td>Rated short-duration power-frequency withstand voltage $U_{w}$</td>
<td>20 kV</td>
</tr>
<tr>
<td>Rated lightning impulse withstand voltage $U_{w}$</td>
<td>60 kV</td>
</tr>
<tr>
<td>Rated frequency $f$</td>
<td>50 Hz</td>
</tr>
<tr>
<td>Rated normal current $I_{n}$</td>
<td></td>
</tr>
<tr>
<td>for ring-main feeders</td>
<td>400 A</td>
</tr>
<tr>
<td>for transformer feeders</td>
<td>200 A</td>
</tr>
<tr>
<td>Rated peak withstand current $I_{p}$</td>
<td></td>
</tr>
<tr>
<td>for transformer feeders</td>
<td>20 kA</td>
</tr>
<tr>
<td>at 1 s</td>
<td>16 kA</td>
</tr>
<tr>
<td>at 3 s (option)</td>
<td>20 kA</td>
</tr>
<tr>
<td>Rated short-time withstand current $I_{k}$</td>
<td>20 kA</td>
</tr>
<tr>
<td>for schemes 01 and 21</td>
<td>20 kA</td>
</tr>
<tr>
<td>Ambient air temperature $T$</td>
<td></td>
</tr>
<tr>
<td>IEC 62 271-1</td>
<td></td>
</tr>
<tr>
<td>Without secondary equipment</td>
<td></td>
</tr>
<tr>
<td>With secondary equipment, class “Minus 5 indoor”</td>
<td>-40 to +70 °C</td>
</tr>
<tr>
<td>Low-voltage terminals in the operating mechanism (option for secondary equipment)</td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td></td>
</tr>
<tr>
<td>• Basic equipment</td>
<td></td>
</tr>
<tr>
<td>• Additional equipment (option), further additional equipment on request</td>
<td></td>
</tr>
<tr>
<td>• Not applicable</td>
<td></td>
</tr>
<tr>
<td>• Not available</td>
<td></td>
</tr>
<tr>
<td>Manual operating mechanism for three-position switch-disconnector:</td>
<td></td>
</tr>
<tr>
<td>– As spring-operated mechanism</td>
<td></td>
</tr>
<tr>
<td>– As spring-operated stored-energy mech.</td>
<td></td>
</tr>
<tr>
<td>Motor operating mechanism for three-position switch-disconnector</td>
<td></td>
</tr>
<tr>
<td>Interlock for cable compartment cover</td>
<td></td>
</tr>
<tr>
<td>Cable compartment cover locked in place/screwed on</td>
<td></td>
</tr>
<tr>
<td>Cable bracket in ring-main and cable feeders, cable routing downwards</td>
<td></td>
</tr>
<tr>
<td>Cable bracket in transformer feeder:</td>
<td></td>
</tr>
<tr>
<td>For cable routing</td>
<td></td>
</tr>
<tr>
<td>– Downwards (standard), f. cable elb. plugs or</td>
<td></td>
</tr>
<tr>
<td>– Downwards, for straight cable plugs or</td>
<td></td>
</tr>
<tr>
<td>– To the rear, for cable elb. plugs</td>
<td></td>
</tr>
<tr>
<td>Low-voltage terminals in the operating mechanism (option for secondary equipment)</td>
<td></td>
</tr>
<tr>
<td>Shunt release</td>
<td></td>
</tr>
<tr>
<td>Auxiliary switch for</td>
<td></td>
</tr>
<tr>
<td>– Switch-disconnector</td>
<td></td>
</tr>
<tr>
<td>CLOSED/OPEN: 1 NO + 2 NC</td>
<td></td>
</tr>
<tr>
<td>– EARTHING CLOSED/OPEN: 1 NO + 1 NC</td>
<td></td>
</tr>
<tr>
<td>Locking device for three-position switch-disconnector</td>
<td></td>
</tr>
<tr>
<td>Short-circuit or earth-fault indicator</td>
<td></td>
</tr>
<tr>
<td>– Wiring at the indicator (standard)</td>
<td></td>
</tr>
<tr>
<td>– Wiring to terminal (option)</td>
<td></td>
</tr>
<tr>
<td>De-earthing lock-out for make-proof earthing switch in transformer feeder</td>
<td></td>
</tr>
<tr>
<td>Closing lock-out for three-position switch-disconnector</td>
<td></td>
</tr>
<tr>
<td>Double cable connection for</td>
<td></td>
</tr>
<tr>
<td>– Overall height of switchgear 1200 mm</td>
<td></td>
</tr>
<tr>
<td>– Overall height of switchgear 1400 mm</td>
<td></td>
</tr>
<tr>
<td>– Overall height of switchgear 1760 mm</td>
<td></td>
</tr>
<tr>
<td>Surge arrester for</td>
<td></td>
</tr>
<tr>
<td>– Overall height of switchgear 1200 mm</td>
<td></td>
</tr>
<tr>
<td>– Overall height of switchgear 1400 mm</td>
<td></td>
</tr>
<tr>
<td>– Overall height of switchgear 1760 mm</td>
<td></td>
</tr>
<tr>
<td>Cable clamps for cable fixing</td>
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</tr>
<tr>
<td>– Supplied separately</td>
<td></td>
</tr>
<tr>
<td>– Preassembled (option)</td>
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</tr>
</tbody>
</table>
### Radial transformer panels

**Scheme 01**

<table>
<thead>
<tr>
<th>Components shown in dotted lines can be used optionally.</th>
</tr>
</thead>
<tbody>
<tr>
<td>K Radial cable connection as infeed</td>
</tr>
<tr>
<td>1 transformer feeder, 1 radial cable connection (Abbreviation 1T)</td>
</tr>
<tr>
<td>Overall dimensions:</td>
</tr>
<tr>
<td>Width (mm)</td>
</tr>
<tr>
<td>510</td>
</tr>
</tbody>
</table>

**Scheme 21**

| K(E) Radial cable connection, K as K(E) with make-proof earthing switch |
| Overall dimensions:                                      |
| Width (mm) | Depth (mm) | Height (mm) | Net weight approx. (kg) |
| 710       | 775        | 1200        | 1400                     | 1760                     | 200                     | 210                     | 250                     |

### Radial panel

**Scheme 02**

<table>
<thead>
<tr>
<th>1 ring-main feeder with radial cable connection (Abbreviation 1RK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall dimensions:</td>
</tr>
<tr>
<td>Width (mm)</td>
</tr>
<tr>
<td>710</td>
</tr>
</tbody>
</table>

### Block versions, consisting of ring-main and transformer feeders (with HV HRC fuse assembly)

**Scheme 10**

<table>
<thead>
<tr>
<th>2 ring-main feeders, 1 transformer feeder (Abbreviations 2RK+1T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall dimensions:</td>
</tr>
<tr>
<td>Width (mm)</td>
</tr>
<tr>
<td>1060</td>
</tr>
</tbody>
</table>

**Scheme 20**

<table>
<thead>
<tr>
<th>1 ring-main feeder, 1 transformer feeder (Abbreviations 1RK+1T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall dimensions:</td>
</tr>
<tr>
<td>Width (mm)</td>
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<tr>
<td>710</td>
</tr>
</tbody>
</table>

**Scheme 71**

<table>
<thead>
<tr>
<th>3 ring-main feeders, 1 transformer feeder (Abbreviations 3RK+1T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall dimensions:</td>
</tr>
<tr>
<td>Width (mm)</td>
</tr>
<tr>
<td>1410</td>
</tr>
</tbody>
</table>

**Scheme 72**

<table>
<thead>
<tr>
<th>4 ring-main feeders, 1 transformer feeder (Abbreviations 4RK+1T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall dimensions:</td>
</tr>
<tr>
<td>Width (mm)</td>
</tr>
<tr>
<td>1760</td>
</tr>
</tbody>
</table>

**Scheme 81**

<table>
<thead>
<tr>
<th>2 ring-main feeders, 2 transformer feeders (Abbreviations 2RK+2T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall dimensions:</td>
</tr>
<tr>
<td>Width (mm)</td>
</tr>
<tr>
<td>1410</td>
</tr>
</tbody>
</table>

**Scheme 82**

<table>
<thead>
<tr>
<th>3 ring-main feeders, 2 transformer feeders (Abbreviations 3RK+2T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall dimensions:</td>
</tr>
<tr>
<td>Width (mm)</td>
</tr>
<tr>
<td>1760</td>
</tr>
</tbody>
</table>

### Block versions, consisting of ring-main feeders (without HV HRC fuse assembly)

**Scheme 11**

<table>
<thead>
<tr>
<th>2 ring-main feeders (Abbreviation 2RK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall dimensions:</td>
</tr>
<tr>
<td>Width (mm)</td>
</tr>
<tr>
<td>710</td>
</tr>
</tbody>
</table>

**Scheme 32**

<table>
<thead>
<tr>
<th>3 ring-main feeders (Abbreviation 3RK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall dimensions:</td>
</tr>
<tr>
<td>Width (mm)</td>
</tr>
<tr>
<td>1060</td>
</tr>
</tbody>
</table>

**Scheme 70**

<table>
<thead>
<tr>
<th>4 ring-main feeders (Abbreviation 4RK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall dimensions:</td>
</tr>
<tr>
<td>Width (mm)</td>
</tr>
<tr>
<td>1410</td>
</tr>
</tbody>
</table>

**Scheme 84**

<table>
<thead>
<tr>
<th>5 ring-main feeders (Abbreviation 5RK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall dimensions:</td>
</tr>
<tr>
<td>Width (mm)</td>
</tr>
<tr>
<td>1760</td>
</tr>
</tbody>
</table>

---

1) Depending on the relevant equipment, e.g. motor operating mechanism
2) Additional wall distance required: ≥ 15 mm
3) For cable routing of transformer cables downwards
* Scheme is also suitable for outdoor enclosure (see pages 18 and 19)

**Abbreviations:**

- RK = Ring-main feeder
- K = Cable feeder
- T = Transformer feeder
- K(E) = Cable feeder for radial cable connection with make-proof earthing switch

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Switchgear Type 8DJ20 up to 24 kV, Gas-Insulated · Siemens HA 45.31 · 2008
1 Niche for customer-side low-voltage equipment
2 Feeder designation label
3 Load-break function "CLOSED – OPEN"
4 Earthing function "OPEN – EARTHED"
5 Rating and type plate
6 Ready-for-service indicator
7 Mimic diagram
8 Short-circuit/earth-fault indicator (option)
9 Sockets for voltage detecting system
10 Interlock of the cable compartment cover
11 HV HRC fuse assembly, cover removed
12 Handle for replacing the HV HRC fuse link
13 Interlock for HV HRC fuse assembly
14 Earthing function "OPEN – EARTHED"
15 Load-break function "CLOSED – OPEN" with "HV HRC fuse tripped" or "shunt release tripped", where applicable
16 Locking device (option for three-position switch-disconnector)
17 Manual operation for the mechanism of the earthing function

**Personal safety**
All feeder-related covers can only be opened if the associated three-position switch-disconnector has been switched to the "EARTHED" position.

**Standard**
Cable connection for cable elbow plugs (option: for cable T-plugs), cable routing downwards

**Option**
Cable connection for cable elbow plugs (option: for cable T-plugs), cable routing to the rear (cable fixing by customer)

**Option**
Cable connection for straight cable plugs, cable routing downwards

18 Manual operation for the mechanism of the load-break function
19 Switchgear vessel, filled with gas
20 Connecting bar to cable connection
21 Arrangement of cable connections
22 Cable compartment
23 Cable bracket
24 Cable (not included in the scope of supply)
25 Cover of the HV HRC fuse compartment
26 Connecting bar to the bushings for the HV HRC fuse
27 Three-position switch-disconnector
28 Spring-operated/stored-energy mechanism
29 Bushing as interface type "A" for cable plug with plug-in contact
30 Option: Bushing as interface type "C" for cable plug with bolted contact (M16)
31 Option: Cable elbow plug with plug-in contact
32 M12 earthing connection
33 Spring-operated mechanism
34 Bushing as interface type "C" for cable plug with bolted contact (M16)
35 Option: Cable T-plug with bolted contact
36 Pressure relief device
37 Option: Straight cable plug with plug-in contact
38 Option: Low-voltage compartment
Three-position switch-disconnector

The switching device used is the proven three-position switch-disconnector.

Functions
- Load-break function
- Earthing function with short-circuit making capacity
- Switch positions: CLOSED – OPEN – EARTHED

Operating mechanisms
The three-position switch-disconnector is operated from the switchgear front via

Detachable lever mechanism (standard)
- Spring-operated mechanism
  - With "spring-operated CLOSED" and "spring-operated OPEN" for installation in ring-main feeders
- Spring-operated/stored-energy mechanism
  - With "spring-operated CLOSED" and "spring-operated OPEN" for installation in transformer feeders
  - With an additional energy store for the function "stored-energy OPEN" after tripping by the HV HRC fuse (striker tripping) or by the shunt release

Options
- Motor operating mechanism for switch-disconnector
- Rotary operating mechanism
- Locking devices
- Auxiliary contacts for three-position switch-disconnector and make-proof earthing switch
- Shunt release for transformer feeders
- Closing lock-out for ring-main feeders
- De-earthling lock-out for transformer feeders
- Different operating levers 1) for the operating mechanisms of the switch-disconnector and of the make-proof earthing switch

1) According to VDN* / VDEW** recommendation

* Association of German Network Operators VDN e.V. at the VDEW in Germany (as of 2003)
** Association of German Power Stations – VDEW e.V.
Components

HV HRC fuse assembly, secondary equipment, pressure absorber system

HV HRC fuse assembly
The HV HRC fuse boxes are single-phase insulated and located above the transformer feeder outside the switchgear vessel.

Standards (see page 21)
HV HRC fuse links with striker in “medium” version according to
• IEC 60 282-1
• VDE 0670 Parts 4 and 402
• DIN 43 625 main dimensions

Features
• Requirements fulfilled as HV alternating current switch-fuse combination
• Selection of HV HRC fuses for transformers
• For further features see Catalog HA 40.1

Secondary equipment (option)
• Auxiliary switches, motor operating mechanisms or shunt releases wired to a terminal strip
• Location of the terminal strip next to the operating mechanism module of the feeder concerned
• Customer-side cable routing to the terminal strip from the side or rear

Pressure absorber system (option)
• Maintenance-free
• For all schemes (except radial transformer panel, scheme 01)
• For rated short-time withstand current \( I_{w} \leq 16 \) kA, with IAC (internal arc classification, see page 22)
• With 105 mm deep pressure relief duct for pressure relief upwards
• For overall height of switchgear:
  – Standard: 1400 mm
  – Option: 1760 mm
• For wall-standing arrangement
• Transformer cable routing:
  – Standard: Downwards
  – Option: To the rear for schemes 10, 71 and 72
• Weight approx. 110 kg

Auxiliary switch, motor operating mechanism and shunt release
Example: Transformer feeder
1 Wiring duct
2 Terminal strip
3 Auxiliary switch at spring-operated mechanism of a ring-main feeder
4 Auxiliary contactors (standard for motor operating mechanism)
5 Motor operating mechanism at spring-operated/stored-energy mechanism
6 Locking device (standard for motor operating mechanism)
7 Shunt release at spring-operated/stored-energy mechanism

Sectional views of the pressure absorber system
1 Wall distance
2 Pressure absorber system with rear pressure relief duct directed upwards
3 Cable bushing
4 Divided floor plate for cable entry for on-site installation
5 Floor opening for the cable feeder
- Bushings according to EN 50 181/DIN EN 50 181 1) with outside cone
- Cable connection at one level
- Access to the cable compartment only if the feeder has been isolated and earthed

Ring-main cable connection
- With bolted contact (M16) as interface type “C” according to EN 50 181/DIN EN 50 181
- For thermoplastic-insulated cables
- For paper-insulated mass-impregnated cables with adapter systems
- For conventional cable sealing ends via elbow adapters
- For cable T-plugs or cable elbow plugs with bolted contact (M16)
- For connection cross-sections up to 300 mm² (standard)
- Cable routing downwards, cable connection at front
- For rated normal currents of 400/630 A

Options
- Suitable for the connection of surge arresters
- Short-circuit/earth-fault indicator
- Mounted cable clamps
- Double cable connection with corresponding cable plugs

Transformer cable connection
- With plug-in contact as interface type “A” according to EN 50 181/DIN EN 50 181
- For cable elbow plugs (standard) or straight cable plugs with plug-in contact
- For thermoplastic-insulated cables
- For connection cross-sections up to 120 mm²
- For rated normal currents of 200 A

Options
- With bolted contact (M16) as interface type “C” according to EN 50 181/DIN EN 50 181
- Mounted cable clamps
- Cable routing to the rear (for cable elbow plugs)

Components
Cable connection

Cable connection (examples)

1. Cable compartment, as delivered
2. Cable plugs with bolted contact (M16)
3. Cable elbow plugs with plug-in contact
4. Straight cable plug with plug-in contact

Cable connections in ring-main feeder
1. Prepared for cable plugs with bolted contact (M16)
2. Phase L1: Make: Euromold type K400 LB as cable elbow plug
3. Phase L2: Make: Euromold type K400 TB as cable T-plug
4. Phase L3: Make: Euromold type AGT 20630 as cable T-plug

Option: Mounted cable clamps

Cable connections in transformer feeder
5. Prepared for cable elbow plugs with plug-in contact
6. Phase L1: Make: Euromold type K158 LR
7. Phase L2: Make: nkt cables type EASW 20/250
8. Phase L3: Make: Cooper type DE 250-R-C

Option: Mounted cable clamps

Transformer cable connection for cable plugs
Standard: With plug-in contact as interface type “A”
Option: With bolted contact (M16) as interface type “C”

Arrangement of connections | Cable routing | Cable plug version
--- | --- | ---
For all schemes (except scheme 01)
- At the front (standard) | Downwards | Cable elbow plug with plug-in contact
Option: Cable plug with bolted contact (M16)
- At the bottom (option) | To the rear 2) | Cable elbow plug with plug-in contact
Option: Straight cable plug with plug-in contact
Option: Straight cable plug with bolted contact (M16)

Only for scheme 01 (radial transformer panel 1T)
- At the bottom (standard) | To the rear 2) (standard) | Cable elbow plug with plug-in contact
Option: Straight cable plug with plug-in contact
Option: Straight cable plug with bolted contact (M16)

Option: Cable plugs, cable sealing ends and cable clamps are not included in the scope of supply.

1) Standard EN 50 181/DIN EN 50 181: "Plug-in bushings above 1 kV up to 36 kV and from 250 A to 1.25 kA for equipment other than liquid-filled transformers."
2) For cable routing of the transformer feeder to the rear: Cable fixing by customer
Dimensions

Switchgear (for floor openings and fixing points refer to page 14)

Radial transformer panels - optionally in 3 overall heights

1. Bushing at the front for cable routing downwards (infeed)
   - Standard: For cable elbow plugs with plug-in contact
   - Option: For cable T-plugs with bolted contact (M16)
2. Bushing at the bottom as interface type “A” with plug-in contact for cable routing to the rear (feeder T)
3. Bushing at the bottom as interface type “A” with plug-in contact for cable routing downwards (feeder T)
4. Bolted joint of cable compartment cover (only for scheme 01)

* Dimension depending on the bushing size and make/type of cable plug
** Dimensions depending on the overall heights of switchgear 1200 and 1400 mm
*** For cable routing to the rear, the depth dimensions are 10 mm deeper
△△ Dimension for bushing as interface type “C” with bolted contact (M16)

Scheme 01
(with radial cable connection as infeed)

1 718

Section A-A

Transformer feeder T
Cable routing of feeder to the rear with cable elbow plugs

Section B-B

Transformer feeder T
Cable routing of feeder downwards with straight cable plugs

Dimension a
- 40 mm for overall height 1400 mm
- 130 mm for overall height 1200 mm

Scheme 21

1 718

Section A-A

Radial cable connection K(E) with make-proof earthing switch

Section B-B

Transformer feeder T

Dimension a
- 40 mm for overall height 1400 mm
- 130 mm for overall height 1200 mm

* Dimension depending on the bushing size and make/type of cable plug
** Dimensions depending on the overall heights of switchgear 1200 and 1400 mm
*** For cable routing to the rear, the depth dimensions are 10 mm deeper
△△ Dimension for bushing as interface type “A” with plug-in contact
**Dimensions**

**Switchgear** (for floor openings and fixing points refer to page 14)

Block versions, consisting of ring-main feeders - optionally in 3 overall heights

![Diagram of switchgear block versions]

**Dimensions depending on the overall heights of switchgear 1200 and 1400 mm**

Δ Dimension for bushing as interface type "C" with bolted contact (M16)

Further scheme types (side views, section A-A, see scheme 84)

![Additional diagrams of switchgear schemes]

4 Bolted joint of cable compartment cover

Scheme 02 (1RK with radial cable connection)
Dimensions

Switchgear (for floor openings and fixing points refer to page 15)

Block versions, consisting of ring-main feeders and 1 transformer feeder - optionally in 3 overall heights

Scheme 72

1. Bushing at the front (standard) for cable routing downwards
2. Bushing at the bottom (option) for cable routing to the rear or downwards

Dimension a
- 40 mm for overall height 1400 mm
- 130 mm for overall height 1200 mm

** Further scheme types ** (for side views, sections A-A and B-B, see scheme 72)

Scheme 20

Scheme 10

Scheme 71

* Dimension depending on the bushing size and make/type of cable plug
** Dimensions depending on the overall heights of switchgear 1200 and 1400 mm
*** For cable routing to the rear, the depth dimensions are 10 mm deeper
△ Dimension for bushing as interface type "C" with bolted contact (M16)
△△ Dimension for bushing as interface type "A" with plug-in contact
Block versions, consisting of ring-main feeders and 2 transformer feeders - optionally in 3 overall heights

1. Bushing at the front (standard) for cable routing downwards
2. Bushing at the bottom (option) for cable routing to the rear or downwards

Dimension a
- 40 mm for overall height 1400 mm
- 130 mm for overall height 1200 mm

Further scheme type (for side views, sections A-A and B-B, see scheme B2)
**Dimensions**

**Floor openings (dimensions 1) in red** and fixing points

---

For transformer panels

**Scheme 01**

1. Wall distance
2. Fixing points
3. Position of the incoming cables for the incoming feeder
4. Position of the incoming cables for the outgoing feeder
5. Position of the incoming cables in the ring-main feeder
6. Position of the incoming cables in the cable feeder
7. Position of the incoming cables in the transformer feeder
8. Position of the incoming cables in the transformer feeder (option)
9. Floor opening for HV cables (and, if applicable, control cables)
10. Fixing frame (base) of the switchgear
11. Cutouts for an overall height of switchgear of 1200 mm
12. Cutouts for an overall height of switchgear of 1200 mm only when connecting the transformer cables to the bushing via straight cable plugs

---

For block versions, consisting of ring-main feeders

**Scheme 84**

---

**Scheme 02 * and 11 *  
Scheme 32 ***

---

**Scheme 70 ***

---

1) Depending on additional options (e.g. surge arrester, 2nd cable, cable-type current transformer) the corresponding floor openings have to be provided as standard (see also page 16)

* Complete dimensions see top figure on the right

---

Position of the floor openings for switchgear with pressure absorber system (for overall heights 1400 and 1760 mm)

**Scheme 02, 11, 20 and 21**

- Pressure absorber system for schemes 02, 11, 20 and 21

Further connection combinations:

- For double cable connection on request
- For surge arrester possible for the following cable compartment covers:
  - Standard
  - 25 mm deeper
  - 150 mm deeper

---

**Scheme 03 and 21***

---

1. Wall distance
2. Pressure relief duct
For block versions, consisting of ring-main feeders and 1 transformer feeder

For block versions, consisting of ring-main feeders and 2 transformer feeders

Scheme 72

Scheme 82

Scheme 20 *

Scheme 81 *

Scheme 71 *

1) Depending on additional options (e.g. surge arrester, 2nd cable, cable-type current transformer) other floor openings have to be provided as standard accordingly (see also page 16)

1 Wall distance
2 Fixing points
5 Position of the incoming cables in the ring-main feeder
7 Position of the incoming cables in the transformer feeder
8 Position of the incoming cables in the transformer feeder (option)
9 Floor opening for HV cables (and, if applicable, control cables)
10 Fixing frame (base) of the switchgear
11 Cutouts for an overall height of switchgear of 1200 mm
12 Cutouts for an overall height of switchgear of 1200 mm only when connecting the transformer cables to the bushing via straight cable plugs

* Complete dimensions see top figures on the right and left

Position of the floor openings and fixing points for double cable connection in ring-main feeders

Note:
Double cable connection in ring-main feeders only possible for switchgear with an overall height of 1400 mm

Abbreviations
RK = Ring-main feeder
T = Transformer feeder

* Complete dimensions see top figure on the left
** Depending on the cable plug used (see also page 16)
*** 300 mm deeper cable compartment cover version
**** 105 mm deeper cable compartment cover version
Dimensions

Examples *** for cable connection in ring-main feeders

Cable connection (examples for overall height 1400 mm)

1. Elbow adapter, make Siemens, type AKE 20/630 with conventional cable sealing end, make Lovink Enertech, type IAE 20
2. Cable T-plug, make Euromold, type (K)400 TB/G

Cable connection with surge arresters (examples for overall height 1400 mm)

Overall height of switchgear: 1400 mm
5. Cable plug, make Tyco Electronics, type RICS 5139
6. Surge arrester, make Tyco Electronics, up to type RDA21 and type RDA24

Dimension a
- 610 mm up to type RDA21
- 635 mm for type RDA24

Overall height of switchgear: 1200 mm
Numbers 5 and 6 not possible

Cable connection with surge arresters (examples for overall height 1400 mm)

Combination on request
7. Elbow adapter, make Siemens, type AKE 20/630 with conventional cable sealing end, make Lovink Enertech, type IAE 20
On request:
8. Surge arrester, make Siemens

9. Cable plug, make Südkabel, type SET (12/24)
10. Surge arrester, make Südkabel, type MUT (12/22)
or
11. Cable plug, make Euromold, type (K)400 TB/G
12. Surge arrester, e.g. make Euromold, type 400 Pb or similar types of construction

Standard cable compartment cover

25 mm deeper cable compartment cover

200 mm deeper cable compartment cover

Overall height of switchgear: 1400 mm
5. Cable plug, make Tyco Electronics, type RICS 5139
6. Surge arrester, make Tyco Electronics, up to type RDA21 and type RDA24

Dimension a
- 610 mm up to type RDA21
- 635 mm for type RDA24

Overall height of switchgear: 1200 mm
Numbers 5 and 6 not possible

Standard cable compartment cover

25 mm deeper cable compartment cover

150 mm deeper cable compartment cover

△ Dimension for bushing with bolted contact (M16)
* Max. mounting space for cable and/or surge arrester
** ** Depth of floor opening
*** Non-binding examples; further examples see Catalog HA 40.1
8DJ20 switchgear is delivered as complete transport unit. The following must be noted:
- Transport facilities on site
- Transport dimensions and weights
- Size of door openings in building
- Switchgear with LV compartment: Please take other transport dimensions and weights into account

Packing
Place of destination inside Germany or other European countries
- Means of transport: Rail and truck
- Type of packing:
  - Panels on open pallets
  - Covered with PE protective foil
Place of destination overseas
- Means of transport: Ship
- Type of packing:
  - Panels on open pallets
  - In closed crates with sealed PE protective foil
  - With desiccant bags
  - With sealed wooden base
  - Max. storage time: 6 months

<table>
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<tr>
<th>Scheme no.</th>
<th>Version (abbreviations)</th>
<th>Switchgear height (without LV compartment) mm</th>
<th>Transport dimensions 1)</th>
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<th>Gross weight approx. kg</th>
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</table>

1) With LV compartment: Other transport dimensions and weights
2) Depending on the relevant equipment, e.g. motor operating mechanism

Abbreviations:
- RK = Ring-main feeder
- T = Transformer feeder
- K(E) = Cable feeder for radial cable connection with make-proof earthing switch
Switchgear with low-voltage compartment, switchgear installation

Option low-voltage compartment
- Overall height
  - Standard: 400 mm
  - Option: 600 or 900 mm
  - Option: Cover
- Installation on the switchgear
  - Possible per feeder
  - Customer-specific configuration
  - Separate cable duct on the switchgear next to the low-voltage compartment

Shipping and transport data
If the switchgear is delivered with low-voltage compartment, other transport dimensions and weights have to be taken into account.

Switchgear installation

Wall-standing arrangement

<table>
<thead>
<tr>
<th>Direction of pressure relief</th>
<th>Overall height 1200 mm</th>
<th>Downwards</th>
<th>Overall height 1400 mm</th>
<th>Downwards</th>
<th>Option: to the rear</th>
<th>Overall height 1760 mm</th>
<th>Downwards</th>
<th>Option: to the rear</th>
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</table>

Free-standing arrangement (on request)
(Switchgear installation only for pressure relief downwards)
Application
8DJ20 switchgear in outdoor enclosures is used where the network structure requires this, but without transformers and low-voltage distribution boards.

Features
- Two sizes
  - For switchgear with 3 feeders
  - For switchgear with 4 feeders
- Degree of protection IP 44
- 8DJ20 switchgear installed in outdoor enclosure
- Cable compartment partitioned off adjacent feeders
- With lockable door
- Complete interlocking functions

Cable connection
See pages 9 and 16.
- Cable entry from below
- Floor cover
  - Divided and bolted
  - Removable for inserting the cables
- Cable bracket movable upwards or to the rear to suit cable sealing ends
- Cables fixed by cable clamps (option) on C-rails of cable bracket
- Option: Cable clamps

Schemes
- For 3-panel outdoor enclosure:
  - Scheme 10
  - Scheme 32
- For 4-panel outdoor enclosure:
  - Scheme 70
  - Scheme 71
  - Scheme 81

** Option: Surge arrester
Only such surge arresters can be used which are suitable for a cable compartment cover flush with the operating front, e.g. make Tyco Electronics, type RDA (see also Catalog HA 40.1 "Cable connections").
Special Designs

Outdoor enclosures with 8DJ20 switchgear

Dimensions

Outdoor enclosure with 2-wing door for 3-panel switchgear

Outdoor enclosure with 2-wing door for 4-panel switchgear

Door of outdoor enclosure
2 Floor fixing 4 x Ø14mm
3 HV HRC fuse assembly
4 Operating mechanism
5 Switchgear vessel
6 Bushing for cable connection
7 Cable elbow plug with plug-in contact
8 Cable T-plug with bolted contact (M16)
9 Pressure relief device
10 Wall distance ≥ 200 mm

* Floor fixing dimension

For position of incoming cables see pages 14 and 15
For cable connections with surge arresters see page 16
Overview of standards (March 2008)

<table>
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<th>Type</th>
<th>IEC standard</th>
<th>VDE standard</th>
<th>EN standard</th>
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1) Only for switchgear type 8DH10

**Standards**

The 8DJ20 switchgear complies with the relevant standards and specifications applicable at the time of type tests.

In accordance with the harmonization agreement reached by the countries of the European Community, their national specifications conform to the IEC standard.

**Dielectric strength**

See also Catalog HA 40.1 "Standards".

**Terms**

“Make-proof earthing switches” are earthing switches with short-circuit making capacity according to IEC 62 271-102/ VDE 0671-102.

**Type of service location**

8DJ20 switchgear can be used as indoor installations in accordance with IEC 61 936 (Power installations exceeding 1 kV AC) and VDE 0101:

- Outside lockable electrical service locations at places which are not accessible to the public. Enclosures of switchgear can only be removed with tools.
- Inside lockable electrical service locations. A lockable electrical service location is a place outdoors or indoors that is reserved exclusively for housing electrical equipment and which is kept under lock and key. Access is restricted to authorized personnel and persons who have been properly instructed in electrical engineering. Untrained or unskilled persons may only enter under the supervision of authorized personnel or properly instructed persons.

**Internal arc classification (option)**

The possibility of arc faults in gas-insulated switchgear type 8DJ20 is improbable and a mere fraction of that typical of earlier switchgear types, due to:

- Use of gas-filled switchgear compartments
- Use of suitable switching devices such as three-position switches with make-proof earthing switch
- Logical mechanical interlocks
- Use of ring-core current transformers (option)

Optionally, switchgear type 8DJ20 can be designed with internal arc classification:

- Internal arc classification IAC
- Type of accessibility A (for authorized personnel only)
  - Accessible sides
    – Side F (front)
    – Side L (lateral)
    – On request: Side R (rear)
  - Arc test current up to 21 kA/1 s

**Climate and environmental influences**

8DJ20 switchgear is completely enclosed and insensitive to climatic influences.

- Climatic tests fulfilled in accordance with IEC 60 932 (report)
- All medium-voltage devices (except for HV HRC fuses) are installed in a gas-tight, welded stainless-steel switchgear vessel which is filled with SF6 gas
- Live parts outside the switchgear vessel are provided with single-pole enclosure
- At no point can creepage currents flow from high-voltage potentials to earth
- Operating mechanism parts which are functionally important are made of corrosion-proof materials
- Bearings in operating mechanisms are designed as dry-type bearings and do not require lubrication
- Suitable instrument transformer designs

**8DJ20 switchgear up to 24 kV, Gas-Insulated · Siemens HA 45.31 - 2008**
## Classification of 8DJ20 switchgear according to IEC 62 271-200

### Design and construction

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<td>– Without HV HRC fuses (RK, T, LST)</td>
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### Internal arc classification (option)

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<tr>
<th>Designation of internal arc classification IAC</th>
<th>Rated voltage 7.2 kV to 24 kV</th>
</tr>
</thead>
<tbody>
<tr>
<td>IAC for</td>
<td>IAC A FL 21 kA, 1 s</td>
</tr>
<tr>
<td>Type of accessibility A</td>
<td>Switchgear in closed electrical service location, access &quot;for authorized personnel only&quot; (acc. to IEC 62 271-200)</td>
</tr>
<tr>
<td>– F</td>
<td>Front</td>
</tr>
<tr>
<td>– L</td>
<td>Lateral</td>
</tr>
<tr>
<td>Arc test current</td>
<td>Up to 21 kA</td>
</tr>
<tr>
<td>Test duration</td>
<td>1 s</td>
</tr>
</tbody>
</table>

1) The loss of service continuity category is always referred to the complete switchgear, i.e. the panel with the lowest category defines the loss of service continuity category of the complete switchgear.

2) 8DJ20 switchgear with pressure absorber: Arc test current up to 16 kA, for overall height of switchgear 1400 and 1760 mm.
If not stated otherwise on the individual pages of this catalog, we reserve the right to include modifications, especially regarding the stated values, dimensions and weights.

Drawings are not binding.

All product designations used are trademarks or product names of Siemens AG or other suppliers.

If not stated otherwise, all dimensions in this catalog are given in mm.

Notes
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