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Fixed-Mounted Cubicles - Outgoing Feeders

Fixed-Mounted Cubicles (OFF1)

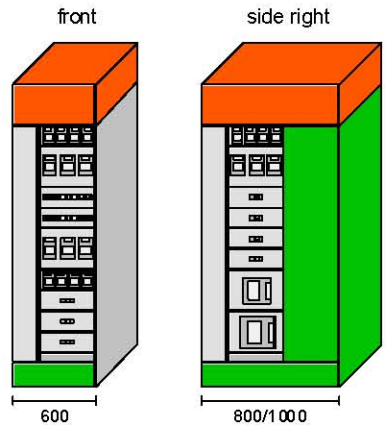
General

The cubicles for outgoing feeders in fixed-mounted design are intended for the installation of moulded case circuit-breakers, fuse-switch-disconnectors or switch-disconnector-fuses.

Structure and Functions

The **1650 mm** high switching device compartment can be equipped with outgoing feeders depending on switchgear type and rated current:

Cable connection



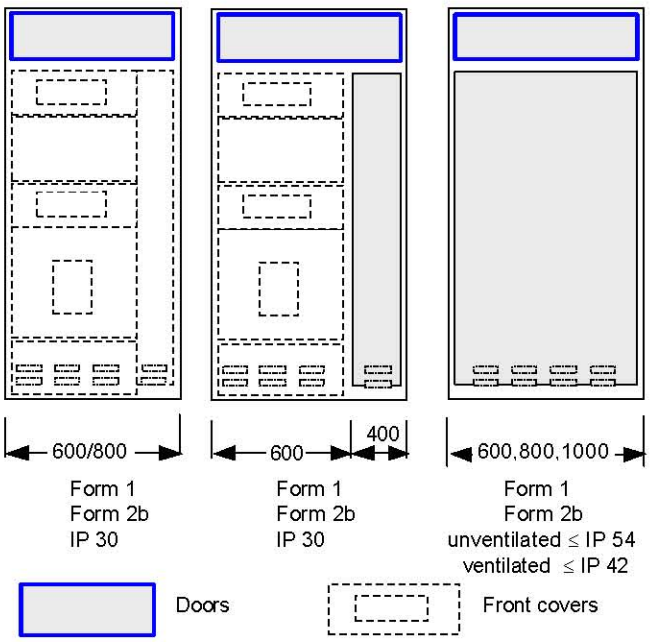
up to 160 A/feeder up to 630 A/feeder

OFF1

The switchgear for outgoing feeders is mounted on continuously adjustable mounting plates and is connected at the line side to the vertical distribution bus.
At the front side the cubicle is covered by front plates or cubicle doors.

Forms of Internal Separation/Doors/Covers

According to the form of internal segregation and the minimum protection degree the following designs can be selected:



Vertical Distribution Bus (3 and 4 pole)

The vertical busbar system is located left in the cubicle.
It offers various possibilities to connect cables, lugs and busbars.
A visual inspection of the connections is possible after removing the front covers.

Short-circuit strength
I_{pk} = 163 kA
I_{cw} = 65 kA, 1s; 50 kA, 3 s

Rated current vertical distribution bus

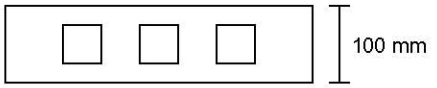
Cross-section	Rated current I_n as function of ambient temperature [A]						
	20°	25°	30°	**35°**	40°	45°	50°
Cubicle unventilated							
2x40x10	1290	1260	1230	**1200**	1170	1135	1100
Cubicle ventilated							
2x40x10	1505	1470	1435	**1400**	1365	1325	1285

PE-, PEN- and N-conductor bars are located in the cable connection compartment.
With 4-pole network systems the N-conductor is assigned to the phase conductors L1, L2, L3.

PE cross-section: 1x40x5
PEN, N cross-section: 1x40x10 or 2x40x10

Installation of Instruments

The instrument panel can be equipped with up to 3 measuring instruments 72 x72 mm.



The belonging current transformers are mounted at the line side.

Cable Connection Compartment

The cable connection compartment is located either at front or at right-hand side according to execution. With 800 mm cubicle depth the lateral cable connection compartment is covered by a front cover, with 1000 mm cubicle depth it is closed by a cable compartment door. With protection degree > IP 30 a cubicle-wide door is employed. The cable connection is performed directly at the switch gear. For the maximum connectable cross-sections see the belonging switch gear catalogues.

Project Planning Rules

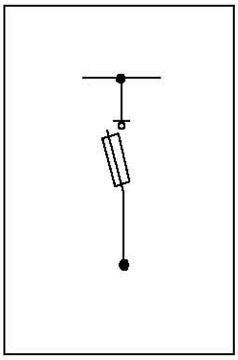
The 1650 mm high switching device compartment can be equipped optionally with regard to space requirements for cable feeders (module heights) and rated currents. The maximum rated current of the vertical distribution bus and the rated diversity factor according IEC 60439-1 have to be observed.

Rated Currents of Outgoing Feeders (Approximate values without test verification)

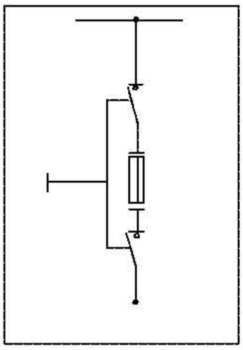
Device Type	Rated current [A]	Rated current I_n as a function of ambient temperature [A] unventilated							ventilated						
		20°	25°	30°	**35°**	40°	45°	50°	20°	25°	30°	**35°**	40°	45°	50°
Fused outgoing feeders 3-pole															
3NP40 10	160				**115**							**150**			
3NP40 70	160				**115**							**150**			
3NP42 70	250				**180**							**245**			
3NP43 70	400				**310**							**395**			
3NP44 70	630				**490**							**585**			
3NP50 60	160				**115**							**150**			
3NP52 60	250				**180**							**245**			
3NP53 60	400				**310**							**395**			
3NP54 60	630				**490**							**585**			
Fused outgoing feeders 3-/4-pole															
3KL50	63				**46**							**53**			
3KL52	125				**95**							**105**			
3KL53	160				**115**							**135**			
3KL55	250				**180**							**235**			
3KL57	400				**250**							**315**			
Non-fused outgoing feeder 3-pole															
3RV101	12				**12**							**12**			
3RV102	25				**20**							**25**			
3RV103	50				**40**							**50**			
3RV104	100				**80**							**90**			
Non-fused outgoing feeders 3-/4-pole															
3VF2	100				**80**							**90**			
3VF3	225				**130**							**150**			
3VF4	250				**200**							**240**			
3VF5	400				**300**							**350**			
3VF6	630				**475**							**560**			
3VL1	160				**90**							**125**			
3VL2	160				**90**							**125**			
3VL3	250				**200**							**240**			
3VL4	400				**300**							**350**			
3VL5	630				**475**							**560**			

Space Requirements of Outgoing Feeders

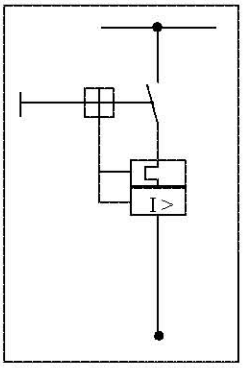
Fuse-switch disconnector



Switch disconnector with 3KL fuses



Circuit-breaker



Qty. Items	Rated current [A]	Type	Module height [mm]	Location / Place
Fused outgoing feeders 3-pole				
1 bis 4	160	3NP40 10	250	vertikal
1 bis 3	160	3NP40 70	350	vertikal
1	250	3NP42 70	250	horizontal
1	400	3NP43 70	275	horizontal
1	630	3NP44 70	300	horizontal
1	160	3NP50 60	200	horizontal
1	250	3NP52 60	250	horizontal
1	400	3NP53 60	250	horizontal
1	630	3NP54 60	300	horizontal
1	63	3KL50	125	horizontal
1	125	3KL52	200	horizontal
1	160	3KL53	200	horizontal
1	250	3KL55	250	vertikal
1	400	3KL57	250	vertikal
Fused outgoing feeders 4-pole				
1	63	3KL50	225	horizontal
1	125	3KL52	225	horizontal
1	160	3KL53	225	horizontal
1	250	3KL55	325	vertikal
1	400	3KL57	325	vertikal
Non-fused outgoing feeders 3-pole				
1 bis 8	12	3RV101	225	vertikal
1 bis 8	25	3RV102	225	vertikal
1 bis 6	50	3RV103	225	vertikal
1 bis 5	100	3RV104	300	vertikal
1 bis 5	100	3VF2	250	vertikal
1	225	3VF3	125/150*	horizontal
1	250	3VF4	150/150*	horizontal
1	400	3VF5	200/200*	horizontal
1	630	3VF6	275/275*	horizontal
1	160	3VL1	125/150*	horizontal
1	160	3VL2	125/150*	horizontal
1	250	3VL3	125/150*	horizontal
1	400	3VL4	200/200*	horizontal
1	630	3VL5	250/250*	horizontal
1 bis 8	12	3RV101	225	vertikal
1 bis 8	25	3RV102	225	vertikal
1 bis 6	50	3RV103	225	vertikal
1 bis 5	100	3RV104	300	vertikal
Non-fused outgoing feeders 4-pole				
1 bis 4	100	3VF2	250	vertikal
1	225	3VF3	175/200*	horizontal
1	250	3VF4	200/200*	horizontal
1	400	3VF5	250/250*	horizontal
1	630	3VF6	350/350*	horizontal
1	160	3VL1	175/200*	horizontal
1	160	3VL2	175/200*	horizontal
1	250	3VL3	175/200*	horizontal
1	400	3VL4	225/225*	horizontal
1	630	3VL5	300/325*	horizontal
Blanking cover without cutouts				
			25	
			50	
			75	
			100	
			125	
			200	
			300	
Blanking cover with cutouts for instruments				
1	72x72 mm		100	
3	72x72 mm		100	

* with plug-in socket

Fixed-Mounted Design (OFF2)

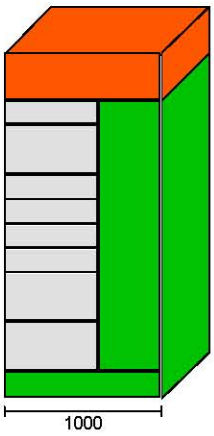
General

The cubicles for outgoing feeders in fixed-mounted design are intended for the installation of moulded case circuit-breakers, fuse switch-disconnectors in compartments.

Structure and Functions

The switching device compartment can be equipped up to a height of 1700 mm depending on execution of the cubicle.

Cable connection right-hand side

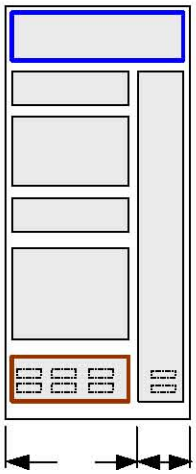


OFF2

The switchgear are mounted on mounting plates and connected at the line side to the vertical distribution bus.
The cubicle is covered by compartment doors and cable connection compartment at the front.

Forms of internal separation/doors

The cubicles are designed with the following form of internal separation and minimum protection degree.



Form 4a

Not-ventilated ≤ IP 54
Ventilated ≤ IP42

Vertical Distribution Bus System (3 and 4 pole)

The vertical distribution bus with the phase conductors L1, L2, L3 is located at the rear in the cubicle. It offers various possibilities to connect cables, lugs and busbars.

Rated current vertical distribution bus

Cross-section	Rated current I_n as a function of ambient temperature [A]						
	20°	25°	30°	**35°**	40°	45°	50°
Cubicle unventilated							
1x40x10	860	840	820	**800**	780	755	735
1x60x10	1075	1050	1025	**1000**	975	945	920
2x40x 10	1290	1260	1230	**1200**	1170	1135	1100
Cubicle ventilated							
1x40x10	915	895	870	**850**	825	805	780
1x60x10	1235	1210	1180	**1150**	1120	1090	1055
2x40x10	1505	1470	1435	**1400**	1365	1325	1285

Short-circuit strength (2x40x10)
I_{pk} = 125 kA
I_{cw} = 50 kA, 1s

Short-circuit strength (2x60x10, 2x80x10)
I_{pk} = 163 kA
I_{cw} = 65 kA, 1s; 50 kA, 3 s

PE-, PEN- and N-conductor bars are located at the rear in the cable connection compartment.
With 4-pole network systems the N-conductor is assigned to the phase conductors L1, L2, L3.

PE cross-section: 1x40x5
PEN, N cross-section: 1x40x10 or 2x40x10

Project Planning Rules

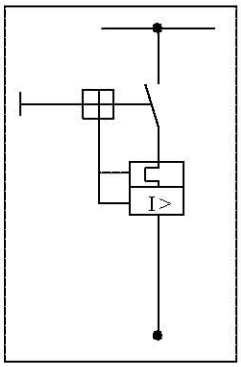
The 1700 mm high switching device compartment can be equipped optionally with regard to space requirements for cable feeders (module heights) and rated currents. The maximum rated current of the vertical distribution bus and the rated diversity factor according IEC 60439-1 have to be observed.
Available mounting plates:
Height: 175 - 575 mm, 1675 mm
Width: 600 mm
Mounting depth: 380 mm
Effective space:
Height - 28,5 mm, Width - 100 mm

Rated Currents of Outgoing Feeders (Approximate values without type verification)

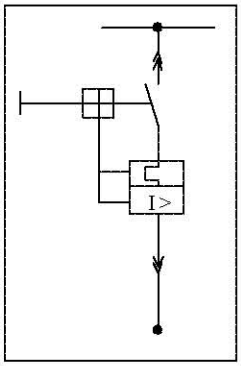
Device Type	Rated current [A]	Rated current I_n as a function of ambient temperature [A] unventilated 35°	ventilated 35°
Fused outgoing feeders 3 pole			
3NP52	250	180	245
3NP53	400	310	395
3NP54	630	490	585
Fused outgoing feeders 3/4 pole			
3KL53	160	115	135
3KL55	250	180	235
3KL57	400	250	315
3KL61	630	500	550
Non-fused outgoing feeders 3/4 pole			
3VF3	225		
3VF4	250	200	240
3VF5	400	300	350
3VF6	630	475	560
3VL1	160	90	125
3VL2	160	90	125
3VL3	250	200	240
3VL4	400	300	350
3VL5	630	475	560

Space Requirements of Outgoing Feeders

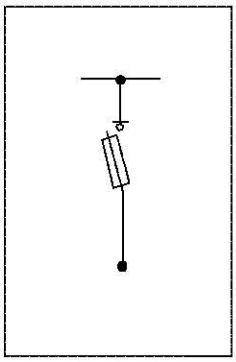
Circuit-breaker



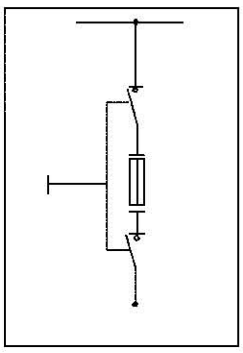
Circuit-breaker with plug-in socket



Fuse-switch disconnector



Switch-disconnector with 3KL fuses



Rated current [A]	Type	Module height [mm]	Module width [mm]
Non-fused outgoing feeders 3VF 3-pole			
225	3VF3	200	600
250	3VF4	300	600
400	3VF5	400	600
630	3VF6	400	600
Non-fused outgoing feeders 3VF 4-pole			
225	3VL3	300	600
250	3VF4	300	600
400	3VF5	400	600
630	3VF6	400	600
Non-fused outgoing feeders 3VL 3-pole *)			
160	3VL1	200	600
160	3VL2	200	600
250	3VL3	300	600
400	3VL4	300	600
630	3VL5	400	600
Non-fused outgoing feeders 3VL 4-pole *)			
160	3VL1	**300**	600
160	3VL2	300	600
250	3VL3	300	600
400	3VL4	400	600
630	3VL5	400	600
Non-fused outgoing feeders 3VL with plug-in socket 3-pole *)			
160	3VL1	200	600
160	3VL2	200	600
250	3VL3	300	600
400	3VL4	300	600
Non-fused outgoing feeders 3VL with plug-in socket 4-pole *)			
160	3VL1	300	600
160	3VL2	300	600
250	3VL3	300	600
400	3VL4	400	600

Rated current [A]	Type	Module height [mm]	Module width [mm]
Fused outgoing feeders 3-pole			
250	3NP52	300	600
400	3NP53	400	600
630	3NP54	400	600
160	3KL53	300	600
250	3KL55	300	600
400	3KL57	300	600
630	3KL61	500 **)	600
Fused outgoing feeders 4-pole			
160	3KL53	300	600
250	3KL55	400	600
400	3KL57	400	600
630	3KL61	500 **)	600

*) Installation possible with DI-module
**) The compartment size is used only for one door-coupling rotary mechanism (drive for fixed-mounting leads to compartment extension)

Note: The compartment sizes are values for orientation only, because no temperature rise test has been applied yet. Outgoing feeders are intended for the connection with bars.

Fixed-Mounted Cubicles (OFF3)

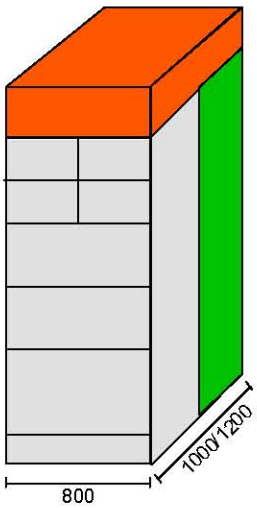
General

The cubicles for outgoing feeders in fixed-mounted design are intended for the installation of moulded case circuit-breakers in compartment design with rear cable compartment.

Structure and Functions

The 1800 mm high switching device compartment can be sub-divided into modules depending on switchgear type and rated current. The modules are 400 mm or 800 mm broad, according to the type of the installed device. For the operation of the devices there can be selected from among front-operated rotary handle mechanism, door-coupling rotary mechanism and motor-operated mechanism.

Cable connection rear



up to 630 A/feeder
OFF3

The switchgear for outgoing cable feeders is mounted on mounting plates and is connected at the line side to the vertical distribution bus.
The cubicle is covered by compartment doors at the front.

Installation of Instruments

Measuring instruments are installed directly in the compartment doors. The belonging current transformers are mounted at the line side.

Vertical Distribution Bus (3 and 4 pole)

The vertical distribution bus is located at the rear in the middle inside the cubicle.

Rated current vertical distribution bus

Cross section	Rated current I_n as a function of ambient temperature [A]						
	20°	25°	30°	**35°**	40°	45°	50°
Cubicle unventilated							
2x40x10	1270	1230	1190	**1150**	1110	1060	1020
2x60x10	1600	1550	1500	**1450**	1400	1340	1290
2x80x10	1820	1760	1710	**1650**	1590	1530	1460
Cubicle ventilated							
2x40x10	1470	1420	1380	**1330**	1280	1230	1180
2x60x10	1810	1750	1700	**1640**	1580	1520	1450
2x80x10	2090	2030	1970	**1900**	1830	1760	1680

Short-circuit strength (2x40x10)
I_{pk} = 125 kA
I_{cw} = 50 kA, 1s

Short-circuit strength (2x60x10, 2x80x10)
I_{pk} = 163 kA
I_{cw} = 65 kA, 1s; 50 kA, 3 s

PE-, PEN- und N-conductor bars are located at the rear in the cable connection compartment.
With 4-pole network systems the N-conductor is assigned to the phase conductors L1, L2, L3.

PE-cross section: 1x40x10
PEN-, N-cross section: 1x40x10 or 2x40x10

Cable Connection Compartment

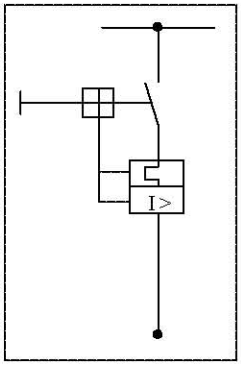
The cable connection compartment is located at the rear of the cubicle. The cable connection is performed at modular terminals or cable connection bars.

Rated Currents of Outgoing Feeders (Approximate values without type verification)

Device Type	Rated current [A]	Rated current I_n as a function of ambient temperature [A] unventilated 35°	ventilated 35°
Non-fused outgoing feeders 3/4 pole			
3RV104	100		
3VL1	160		
3VL2	160	**120**	**130**
3VL3	250	**195**	**208**
3VL4	400	**240**	**285**
3VL5	630	**415**	**485**
Fuse outgoing feeders 3/4 pole			
3KL50	63	**60**	**63**
3KL52	125	**95**	**104**
3KL53	160	**116**	**128**
3KL55	250	**202**	**217**
3KL57	400	**265**	**290**
3KL61	630	**370**	**430**

Space Requirements of Non-Fused Outgoing Feeders

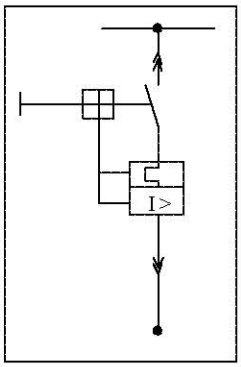
Circuit-breaker



Rated current [A]	Type	Module height [mm]	Module width [mm]
Non-fused outgoing feeders 3 pole			
100	3RV104	200*	400
160	3VL1	200	400
160	3VL2	200	400
250	3VL3	200	400
400	3VL4	300	800
630	3VL5	300	800
Non-fused outgoing feeders 3 pole with neutral link			
100	3RV104	200*	400
160	3VL1	300	400
160	3VL2	300	400
250	3VL3	300	400
400	3VL4	400	800
630	3VL5	400	800
Non-fused outgoing feeders 4 pole			
160	3VL1	300	400
160	3VL2	300	400
250	3VL3	300	400
400	3VL4	400	800
630	3VL5	400	800

* only a transformer possible

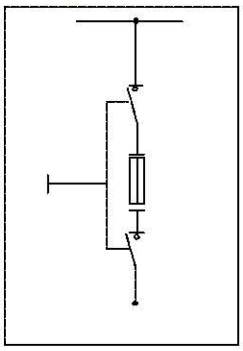
Circuit-breaker with plug-in socket



Rated current [A]	Type	Module height [mm]	Module width [mm]
Non-fused outgoing feeders 3 pole			
160	3VL1	300	800
160	3VL2	300	800
250	3VL3	300	800
400	3VL4	300	800
630	3VL5	300	800
Non-fused outgoing feeders 3 pole with neutral link			
160	3VL1	300	800
160	3VL2	300	800
250	3VL3	300	800
400	3VL4	400	800
630	3VL5	400	800
Non-fused outgoing feeders 4 pole			
160	3VL1	300	800
160	3VL2	300	800
250	3VL3	300	800
400	3VL4	400	800
630	3VL5	400	800

Space Requirements of Fused Outgoing Feeders

Circuit-breaker
with 3KL fuses



Rated current [A]	Type	Compartment height [mm]	Compartment width [mm]
Fused outgoing feeders 3 pole			
63	3KL50	200 *)	400
125	3KL52	250	400
160	3KL53	250	400
250	3KL55	300	400
400	3KL57	300	400
630	3KL61	500	800
Fused outgoing feeders 3 pole with neutral link			
63	3KL50	200 *)	400
125	3KL52	300	400
160	3KL53	300	400
250	3KL55	350	400
400	3KL57	400	400
630	3KL61	500 **)	800
Fused outgoing feeders 4 pole			
63	3KL50	200 *)	400
125	3KL52	300	400
160	3KL53	300	400
250	3KL55	350	400
400	3KL57	400	400
630	3KL61	500 **)	800

*) Only one transformer possible
**) The compartment size is used only for one door-coupling rotary mechanism (drive for fixed-mounting leads to compartment extension)

Fixed-Mounted Design (OFF4)

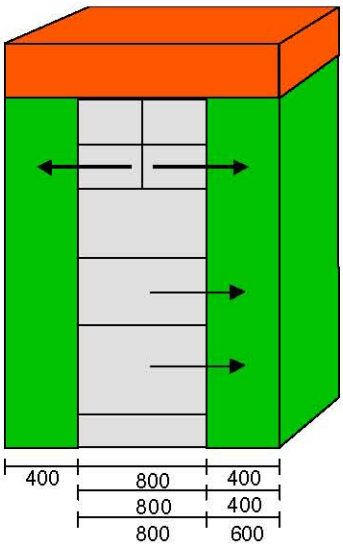
General

The cubicle for outgoing feeders in fixed-mounted design are intended for the installation of moulded case circuit-breakers in compartment design with front cable connection compartment.

Structure and Functions

The 1700 mm high switching device compartment can be sub-divided into modules depending on switchgear type and rated current. The modules are 400 mm or 800 mm broad, according to the type of the installed device. For the operation of the devices there can be selected from among front-operated rotary handle mechanism, door-coupling rotary mechanism and motor-operated mechanism.

Cable connection on the right side and / or on the left side



Form 3b
Form 4b
(Form 4 Type 5
optional
Form 4 Type 7
acc. to BS EN 60439)

unventilated ≤ IP 54
ventilated ≤ IP 42

up to 630 A/outgoing
OFF4

The switchgear for outgoing cable feeders is mounted on mounting plates and is connected at the line side to the vertical distribution bus.
The cubicle is covered by compartment doors at the front.

Installation of Instruments

Measuring instruments are installed directly in the compartment doors. The belonging current transformers are mounted at the line side.

Vertical Distribution Bus 3 and 4 pole

The vertical distribution bus is located at the rear in the middle inside the cubicle.

Rated current vertical distribution bus

Cross section	Rated current I_n as a function of ambient temperature [A]						
	20°	25°	30°	**35°**	40°	45°	50°
Cubicle unventilated							
2x40x10	1270	1230	1190	**1150**	1110	1060	1020
2x60x10	1600	1550	1500	**1450**	1400	1340	1290
2x80x10	1820	1760	1710	**1650**	1590	1530	1460
Cable ventilated							
2x40x10	1470	1420	1380	**1330**	1280	1230	1180
2x60x10	1810	1750	1700	**1640**	1580	1520	1450
2x80x10	2090	2030	1970	**1900**	1830	1760	1680

Short-circuit strength (2x40x10)
I_{pk} = 125 kA
I_{cw} = 50 kA, 1s

Short-circuit strength (2x60x10, 2x80x10)
I_{pk} = 163 kA
I_{cw} = 65 kA, 1s; 50 kA, 3 s

PE-, PEN- and N-conductor bars are located at the rear in the cable connection compartment.
With 4 pole network systems the N-conductor is assigned to the phase conductors L1, L2, L3.

PE-cross-section: 1x40x10
PEN-, N-cross-section: 1x40x10 or 2x40x10

Cable Connection Compartment

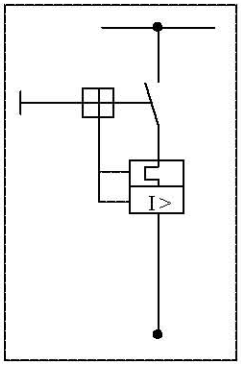
The cable connection compartment is located on the right side and optionally on the left side. The cable connection is performed directly at modular terminals or the cable connection bars.
The cable connection for outgoing feeders with compartment width of 800 mm is performed from the right side.

Rated Currents of Outgoing Feeders

Device Type	Rated current [A]	Rated current I_n as a function of ambient temperature [A] unventilated 35°	ventilated 35°
Non-fused outgoing feeders 3/4 pole			
3RV104	100		
3VL1	160		
3VL2	160	**120**	**130**
3VL3	250	**195**	**208**
3VL4	400	**240**	**285**
3VL5	630	**415**	**485**
Fused outgoing feeders 3/4 pole			
3KL50	63	**60**	**63**
3KL52	125	**95**	**104**
3KL53	160	**116**	**128**
3KL55	250	**202**	**217**
3KL57	400	**265**	**290**
3KL61	630	**370**	**430**

Space requirements of Non-Fused Outgoing Feeders

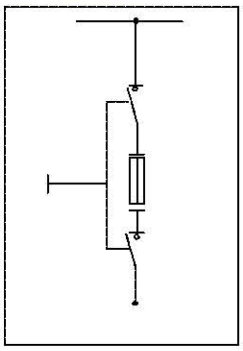
Circuit-breaker



Rated current [A]	Type	Compartment height [mm]	Compartment width [mm]
Non-fused outgoing feeders 3 pole			
100	3RV104	200	400
160	3VL1	200	400
160	3VL2	200	400
250	3VL3	200	400
400	3VL4	300	800
630	3VL5	300	800
Non-fused outgoing feeders 3 pole with neutral link			
100	3RV104	200	400
160	3VL1	250	400
160	3VL2	300	400
250	3VL3	250	400
400	3VL4	350	800
630	3VL5	350	800
Non-fused outgoing feeders 4 pole			
160	3VL1	250	400
160	3VL2	250	400
250	3VL3	250	400
400	3VL4	350	800
630	3VL5	350	800

Space requirements of Fused Outgoing Feeders

Circuit-breaker
with 3KL fuses



Rated current [A]	Type	Compartment height [mm]	Compartment width [mm]
Fused outgoing feeders 3 pole			
63	3KL50	200	400
125	3KL52	250	400
160	3KL53	250	400
250	3KL55	300	400
400	3KL57	300	400
630	3KL61	500	800
Fused outgoing feeders 3 pole with neutral link			
63	3KL50	200	400
125	3KL52	300	400
160	3KL53	300	400
250	3KL55	350	400
400	3KL57	**350**	400
630	3KL61	500 **)	800
Fused outgoing feeders 4 pole			
63	3KL50	200 *)	400
125	3KL52	300	400
160	3KL53	300	400
250	3KL55	350	400
400	3KL57	**350**	400
630	3KL61	500 **)	800

*) Only a transformer is possible
**) The compartment size is used only for one door-coupling rotary mechanism (drive for fixed-mounting leads to compartment extension
≥ compartment height 600 mm)