HV POWER

SWITCHGEAR Division

SIEMENS 8DJH 11/22 kV Ring Main Units

Overview of Outdoor and Indoor solutions

01

Transformer Kiosk

02

Indoor on Base
Absorber Class A

03

Outdoor Class A

07

Outdoor Class B

06

Indoor/Outdoor
Customised Automation

04

Outdoor Class B

05

Indoor Class A

www.hvpower.co.nz

RMUs in Outdoor Enclosures

The 8DJH compact Ring Main Unit offers a wide variety of module choices. Designs can include ring switches, transformer (fused) feeders, circuit breakers, cable feeders, bus sectionalisers and revenue metering panels. Your specific needs can be accommodated by specifying the arrangement required. The 8DJH is rated for both 11 and 22 kV distribution systems, up to 630 A. Outdoor enclosures are available to suit different configurations and arc fault needs:

07 – Class B, Flat Pad

Class B RMU on concrete pad mounting

Class B 'public safe' arc fault rated FLR

- Internal arc containment – via left-hand chimney – independent of any vault etc
- Supplied pre-mounted on flat concrete pad
- Can be installed onto a vault where seismic withstand is needed

- Two sizes fitting 4 or 5 x 8DJH 1200 mm high panels: [1] [2]
  - Width 1950 X depth 940 X height 1645 mm
  - Width 2380 X depth 960 X height 1645 mm
- Automation options available
- Powder-coated galvanised steel, RAL6020 Green

Class B RMU interior

03 – Class A

Class A RMU on concrete pad mounting

- Class A, arc fault rated FLR
- Internal arc containment – via rear chimney
- Flat concrete pad available
- Options for seismic withstand

- Sizes to fit 3 to 6 x 8DJH panels. [1, 3] Depth 1030 mm, height from 1575 mm
- Powder-coated galvanised steel, RAL6020 Green or other RAL colours on request

Class A RMU with front cover slid back into roof cavity

04 – Class B, Bosecker

- Class B 'public safe' arc fault rated FLR
- Internal arc containment – via built-in watertight underground vault
- No concrete pad or separate vault required
- Seismic rated
- Three sizes fitting 3, 4 or 5 x 8DJH panels [1, 2] 1450 mm above grade, 1154 mm depth. Width 1674 up to 3100 mm
- Automation options available

Class B RMU with Bosecker enclosure

- Powder-coated stainless steel, RAL7032 Pebble Grey or other RAL colours on request

Class B RMU Bosecker enclosure interior

01 – Transformer Kiosk

HV Power can also free-issue your desired preconfigured Siemens 8DJH to ETEL for inclusion in their SMART KIOSK. Contact us for details.

Class A/Class B basic RMU

RMU panels are 1200 mm high with ALFR rating. Overall size and rating will depend upon the enclosure design and certification

[1] Depends upon panel types selected

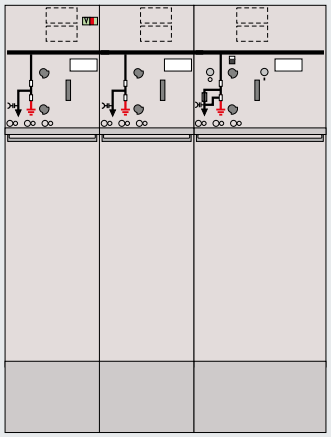
[2] Refer to HV Power's Technical Data Sheet for further information

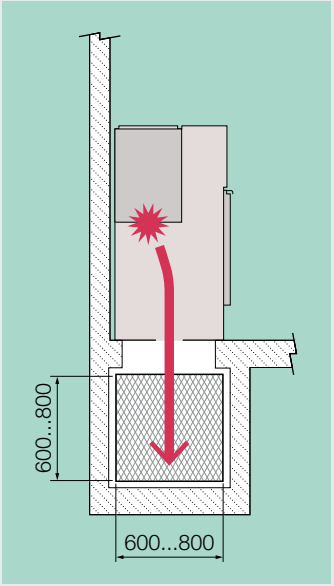
[3] Refer to Siemens' 8DJH Catalogue for enclosure information

Indoor Applications

Each 8DJH panel can be ordered with different venting, protection and control options to suit individual site needs. In the unlikely event of an internal arc failure within the switchgear, the 'venting' path of the excess pressure must be decided.

05 – Class A



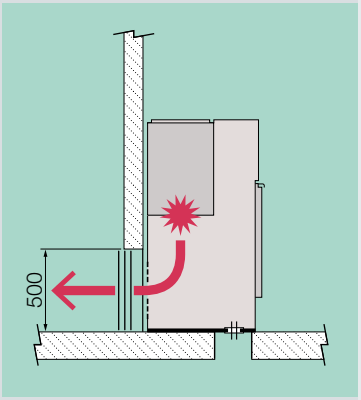


Bottom venting to cable trench

The 1400 mm high 8DJH panels are for indoor use. This arrangement is used when the cable trench meets minimum space requirements (600 mm W X 800 mm H, or 800 mm W X 600 mm H), and in the unlikely event of an internal arc failure within the switchgear, the energy is vented though the bottom of the switchgear into the cable trench.

Special Orders

The switch gear can be specified to vent through the rear into a space that has suitable restricted access.

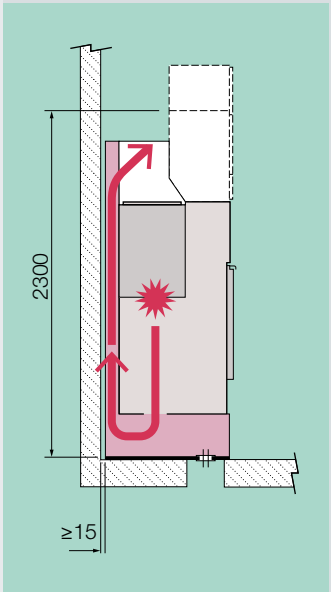


Venting at rear of RMUs

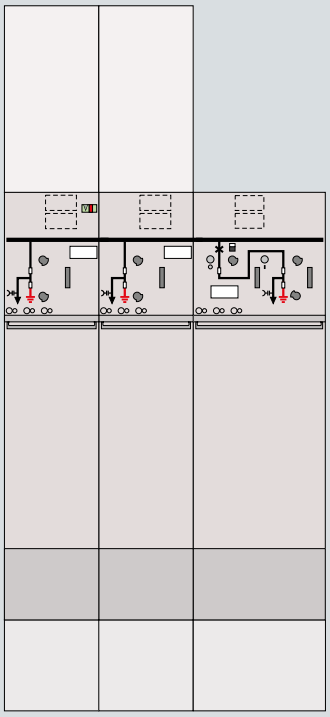
Stands to raise the switchgear from the floor (300, 600 & 900 mm) are available, where additional space is required for cable bending. This is useful where sites have shallow cable trenches, large cables, or sites where cables are run on the floor.

02 – Class A with base absorber

Typically used where there is no cable trench. The 1400 mm switchgear panels are fitted onto a 300 mm high base absorber that connects to a chimney up the back of the switchgear. Additionally, two 600 mm LV cubicles are fitted on top of the switchgear, to provide further protection to an operator who may be at the front of the switchgear.

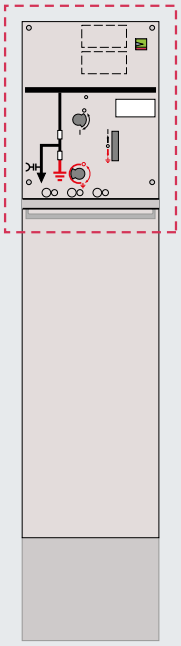


Venting at top of RMUs



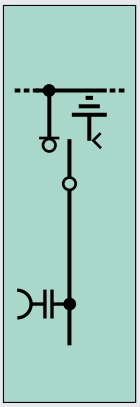
Class A RMU with base absorber

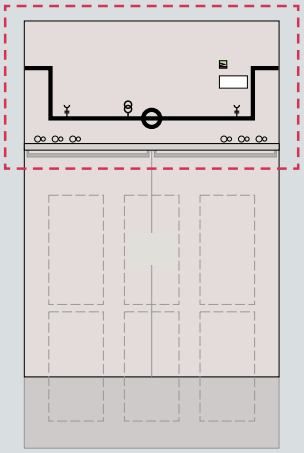
Panel Types



R
Ring Switch

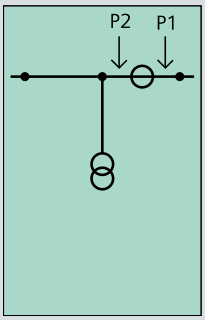
- 630 A rated load make/break
- Various fault passage and voltage detection options available
- 310 mm wide panel

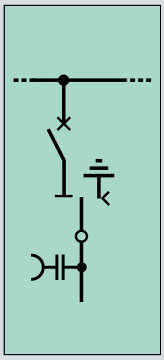




M
Metering Panel

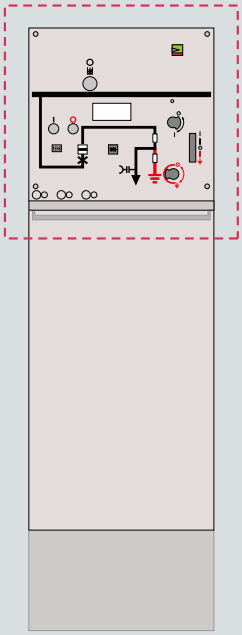
- Provides an air-insulated enclosure for fitting of metering VTs and CTs
- 840 mm wide panel





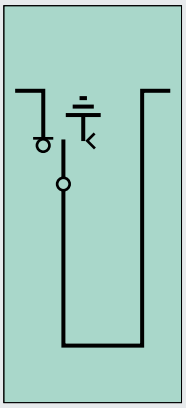
L
Circuit Breaker

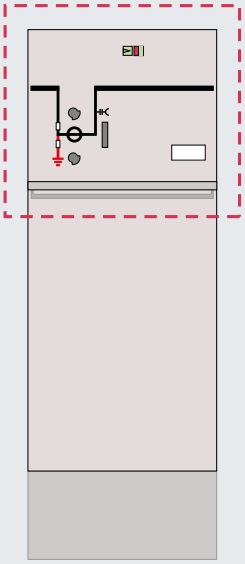
- 630 A rated
- 25 kA 1s fault current rated
- Vacuum breaker
- Kries IKI-35 self-powered relay can be fitted in the panel, or protection relays into a separate LV cubicle
- 430 mm wide panel
- Heavy duty version for auto-reclose

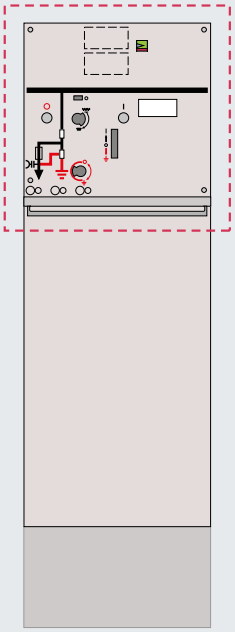


S
Bus Section

- Switch or circuit breaker option
- 430 to 620 mm panel widths depending upon version

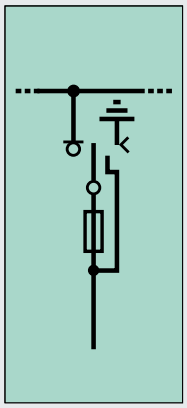






T
Transformer Fused T panel

- 200 A rated, load make/break switch
- DIN 43625, 292 mm or 442 mm fuses with 6 A to 140 A available from HV Power stock
- 430 mm wide panel



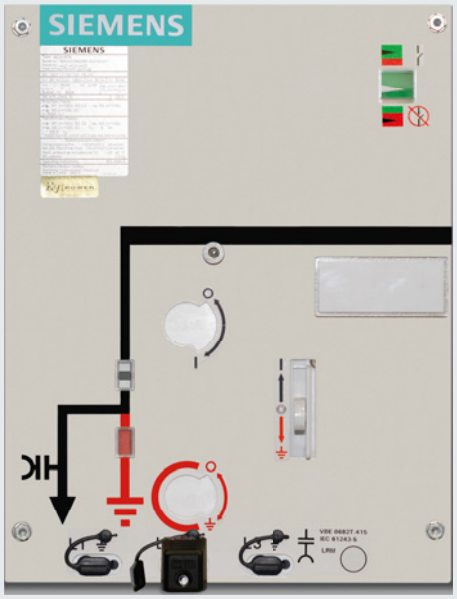
Ring switch and circuit breaker panels also available in 500 mm width

Monitoring Options

Each panel can have space for up to two 96 mm instruments, allowing the RMU to meet even the most diverse of requirements. The default panel arrangement has LRM (Low Resistance Modified Capacitive Voltage detecting system) sockets for voltage detection/phasing. Plug-in visual indicators can be provided. The 'older' HR (High Resistance) type sockets can also be provided on request.

The WEGA 1.2C/2.2C can be fitted where permanently fitted voltage detection is desired, replacing the LRM sockets. Sockets on the WEGA allow for testing of phasing with appropriate test devices.

Popular choices for fault passage indicators are the SIGMA F+E 3 (where auxiliary power is not available) and the ComPass B series (when auxiliary power is available). A WEGA 1.2C/2.2C is fitted by default when ComPass B is specified, providing it with voltage information for its directional and SCADA measurements.



◀ Default panel with LRM sockets (one plug-in indicator shown)

Alternative panel with SIGMA F+E3 Fault Passage Indicator ▼ and WEGA Voltage Detection

Voltage sensing via capacitive voltage taps (e.g. LRM/WEGA) is the most common approach for voltage detection, but low-power resistive voltage dividers (sensors) are becoming more popular due to better accuracy and where automation is being used. Low power sensors can be used with Siemens FCM or the ComPass B 2.0 fault passage indicators, and protection relays such as the Siemens SIPROTEC Compact 7SJ81 series.

Low power voltage sensors are cost effective to be used in automation schemes, being used on each feeders/incomer, thereby eliminating the need for troublesome bus VTs.

SIGMA F+E 3

- Battery-powered fault passage indicator

ComPass B & B 2.0

- Advanced fault passage indication with current/voltage/power monitoring and event logs
- The B 2.0 adds USB connectivity and allows voltage input from low-power sensors

Siemens FCM

- Advanced fault passage indication with current/voltage/power monitoring and event logs
- The FCM allows voltage input via 63.5 volt secondarys or low-power sensors

WEGA Voltage Detection

- Capacitive devices with LRM outputs for phasing
- Visual indication of voltage presence
- WEGA 2.2C (compared to 1.2C) adds a clean contact reporting voltage presence

Low-power Sensors

- Plugs into the cable elbow
- Provides far more precise and linear measurements than capacitive taps
- Can be used with ComPass B 2.0, Siemens FCM, our Level 2 Automation Controller, or the likes of Siemens SIPROTEC Compact 7SJ80 over-current protection relays
- Better performance, lower cost and take less space than traditional magnetic VTs

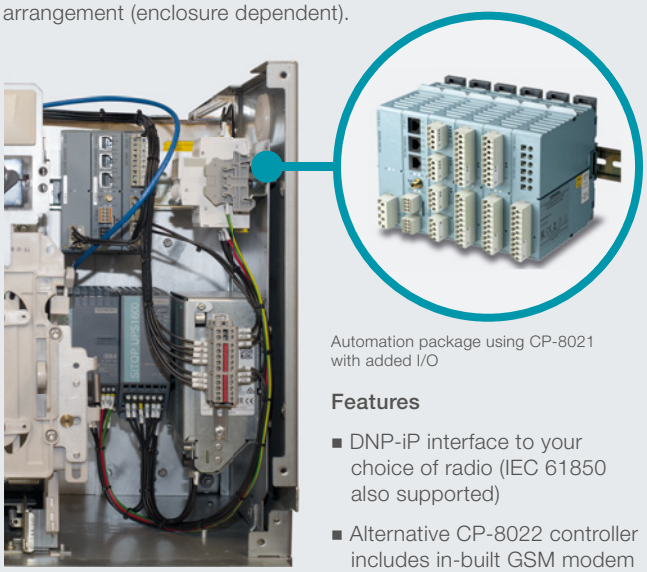
Automation

Level 0 – Telecontrol/automation ready

The 8DJH series embraces the 'Automation Ready' concept. Many of our switchgear configurations can be supplied 'dumb' with no telecontrol or automation, but later when required, a kit can be supplied allowing it to be field fitted. This allows capital expenditure to be delayed until actually needed.

Level 1 – Telecontrol

HV Power's automation package (Level 1 & 2) is based on the field-proven and hugely popular Siemens A8000 series, specifically the CP-8021. Our compact package (controller, battery and charger) can be fitted inside the space available in a fused 'T' panel. Where a T panel is not used, the controller is typically mounted in its own compact enclosure to the right of the panel arrangement (enclosure dependent).



Automation package using CP-8021 with added I/O

Features

- DNP-iP interface to your choice of radio (IEC 61850 also supported)
- Alternative CP-8022 controller includes in-built GSM modem
- Standard and customised SCADA maps
- Monitoring and control of all relevant points
- MODBUS to DNP/IEC 61850 conversion, to report all ComPass B values to SCADA
- Additional digital and analogue I/O can be added for custom functions
- Controller purpose designed for field use with 5 kV EMC withstand and -40 to +70 deg C temperature range
- Simple web interface allowing customer setup changes

Class B RMU in Bosecker enclosure with pull-out drawer

Level 2 – Automation

HV Power's standard Level 1 telecontrol package can be programmed with custom logic, creating a Level 2 scheme. A typical application is for an automatic voltage change-over scheme. For example, when a voltage failure is detected on the preselected incomer, the scheme can automatically switch the load to the backup source, and after power returns to the main source for a pre-determined time, the load can be transferred back again.

The implementation of such schemes may need some additional sensors such as voltage detection/measurement. With our extensive experience in customisation of ring mains, we can guide you to an appropriate solution whether this be with existing capacitive voltage taps and WEGA devices or addition of the newer low-power sensor technology.

Level 3 – Custom Automation

Automation via protection relays added to LV cubicles

Applications where circuit breakers with 'full' protection relays are required, the automation of such schemes is classified as Level 3. This is a custom design to meet specific needs, often using customer specified devices. Level 3 automation is mainly featured in solutions delivered in our 06 category.

Pull-out drawer provides convenient access for technicians

Low-power sensors fitted to cable terminations

Protection

Protection can be as simple as a T panel with fuses (covering the range of 6 A to 125 A), though to a vacuum circuit breaker ('L panel') with 'full-blown' protection relay. The 8DJH supports whatever protection panel arrangement you need.

Fuses

DIN 43625 fuses (442 mm) can be used on both 11 kV and 22 kV applications. HV Power stock fuses ranging from 6 A to 125 A.

Circuit breaker with IKI-35

This self-powered relay fits into one of the 96 mm slots directly in the circuit breaker front control panel. This is ideal, as it allows circuit breakers to be used without the normal added cost of low-voltage cubicles with batteries, chargers etc, for larger transformers where fuses are not wanted.

Circuit breaker with 7SJ80

Mounted in an LV cubicle on top of indoor switchgear, or an automation cubicle on the side of outdoor switchgear the Siemens SIPROTEC Compact 7SJ80 series is perfect for over-current or directional over-current protection. The 7SD80 series can be used where differential protection is required.

The 7SJ80 can be fitted with additional I/O where control monitoring of other panels is required (Level 3 Automation).

7SJ82

SIPROTEC 5 protection relays feature powerful functions for demanding applications, including where arc fault monitoring is required.

The 7SJ85 offers input expansion options so for example, one protection relay could be used as a cost effective protection of multiple circuit breakers.

HV Power standard product categories

Category	Order Code Prefix*	Description
01	01 AFLR ETEL	1200 mm RMU for use in transformer packages
02	02 AFLRbase ID	1400 mm RMU with 300 mm base unit for use indoor with a flat floor
03	03 AFLR OD	1400 mm RMU in a Class A outdoor enclosure
04	04 BFLR OD	1200 mm RMU in a Class B Bosecker outdoor enclosure
05	05 AFLR ID	1400 mm RMU for use indoors over cable trench
06	06	Custom RMU or custom automation in any enclosure
07	07 BFLR OD	1200 mm RMU in a Class B Flat Pad outdoor enclosure

* A = Class A, B = Class B, FLR = Front Lateral Rear, OD = Outdoor, ID = Indoor, Base = Base unit for venting rear and upwards

About

SIEMENS is a global leader in power generation, transmission and distribution. In New Zealand, protection IED products from Siemens Energy division together with a range of MV switchgear, including Ring Main Units, reclosers and outdoor circuit breakers are distributed by HV Power.

At HV Power, our staff have practical industry experience and we pride ourselves on fully understanding the applications, specifications, settings and operation of all our products. Timely delivery of reliable, quality and competitive solutions is at the heart of what we do. We invest in regular training of our staff by our suppliers and our solutions are supported by Siemens.

HV Power receives standard 'basic' Siemens panels from the factory, and customises these with the options and enclosures as specified by the customer. We can supply from 'simple' street side RTR ring main units, through to highly custom-designed switchboard solutions.

HV POWER
SWITCHGEAR Division

HV Power Measurements and Protection Ltd
Unit 4, 1 Porters Avenue, Eden Terrace
PO Box 26-074, Epsom, Auckland 1344, New Zealand
Tel 09 377 2001 Fax 09 302 2142
sales@hvpowerautomation.com

Wellington Office
8 Rongotai Road, Kilbirnie, Wellington, New Zealand
Tel: 64-4-387 7339

HV Power Configuration

This document provides an overview of main product features. Not all options or combinations are shown or supported. Contact HV Power for specific information or refer directly to individual product specifications.

Services we offer

- Establish and enforce an approved 'standard design' for each customer
- Support people are based in New Zealand
- Installation and operation training
- SCADA mapping and custom automation functions
- New Zealand stock of 442 mm 11/22 kV fuses