Essential for Today
Potential for Tomorrow

HYUNDAI ELECTRIC
DC MCCB (HGP)

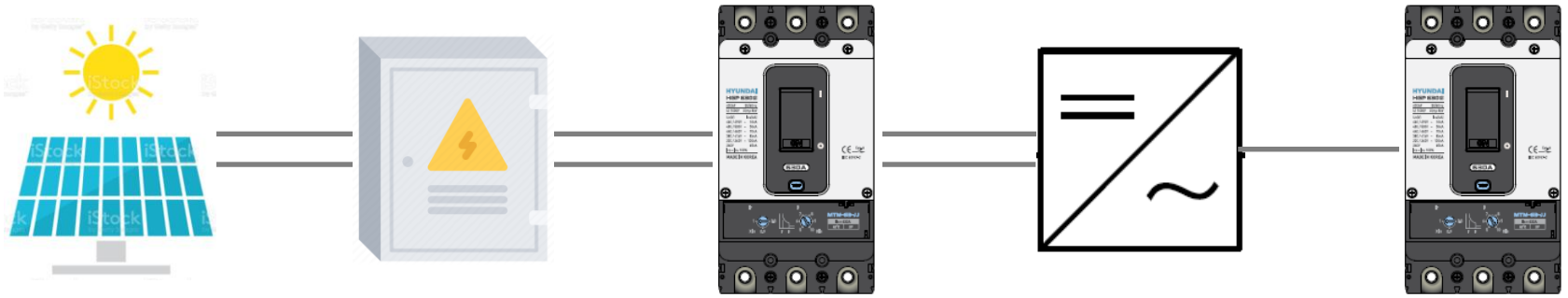
HYUNDAI ELECTRIC

Contents

Application

Examples of photovoltaic application

Photovoltaic power plant | EV Charge station | Fuel cell | Ship power systems | ESS



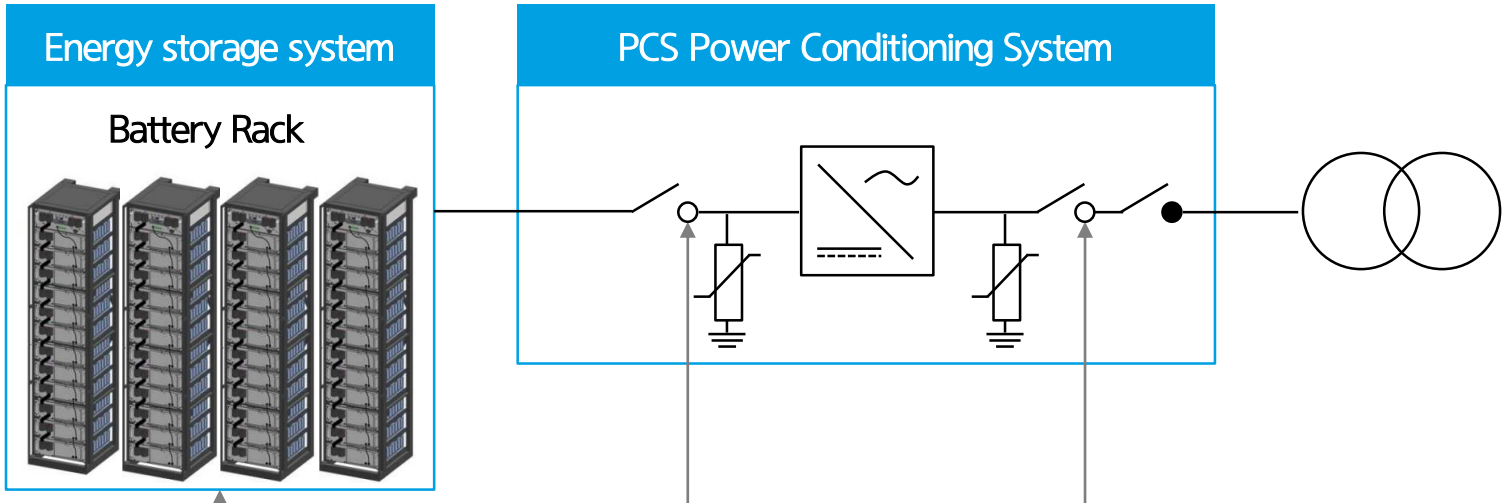
PV ARRAY | PV Combiner Box | DC breaker /DC Switch | PV Inverter | AC Breaker /AC Switch

Benefits of increasing from 1,000 Vdc to 1,500 Vdc

- Junction box and DC cable usage reduction
- Engineering time and failure rate reduction
- DC Line loss reduction
- Investment cost reduction

Application

Examples of ESS application



Battery side / DC main disconnector

- DC Breaker / switch disconnector with Fuse
- Voltage : Up to 1,500 Vdc
- Duty: load break and short-circuit fault level/withstand rating

AC Side

- Voltage : Up to 690 Vac
- Protection device : MCCB/ACB/Fusible switches
- Duty: load break

Main Feature

Features

Maximize insulation performance	▪ Insulation voltage Ui : 1,000V ▪ k Impulse withstand : 8kV
High breaking capacity	▪ 100kA at 1,000Vdc
Adjustable type of rated current of all frames	
IEC Standards and certifications	▪ IEC 60947-2 CB certification ▪ IEC 60947-2 Annex. P CB certification ▪ (HGP100/160/250)

Main Feature

Product Range – 1,000/1,500Vdc up to 800AF

			HGP160	HGP250	HGP400	HGP600	HGP800
Frame		AF	160	250	400	630	800
Poles		Nr	3,4	3,4	3,4	3,4	3,4
Rated service	Ue / 3P in series	Vdc	750	750	750	750	750
Voltage	4P in series	Vdc	1,000/1,500	1,000/1,500	1,000/1,500	1,000/1,500	1,000
Rated impulse withstand voltage	Uimp	kV	8	8	8	8	8
Rated insulation voltage	Ui	V	1,000	1,000	1,000	1,000	1,000
Rated ultimate short circuit breaking capacity	Icu	kA	F S H X 10 55 85 100	F S H X 10 55 85 100	F S H X 10 55 85 100	F S H X 10 55 85 100	F S H X 10 55 85 100
Utilization category(IEC 60947-2)			A	A	A	A	A
Trip unit	T adjustable		0.7 ~ 0.4 x In	0.7 ~ 0.4 x In	0.7 ~ 0.4 x In	0.7 ~ 0.4 x In	0.7 ~ 0.4 x In
	M adjustable		5 ~ 10 x In	5 ~ 10 x In	5 ~ 10 x In	5 ~ 10 x In	5 ~ 10 x In

Accessories

Electrical Accessories

Auxiliary Contact

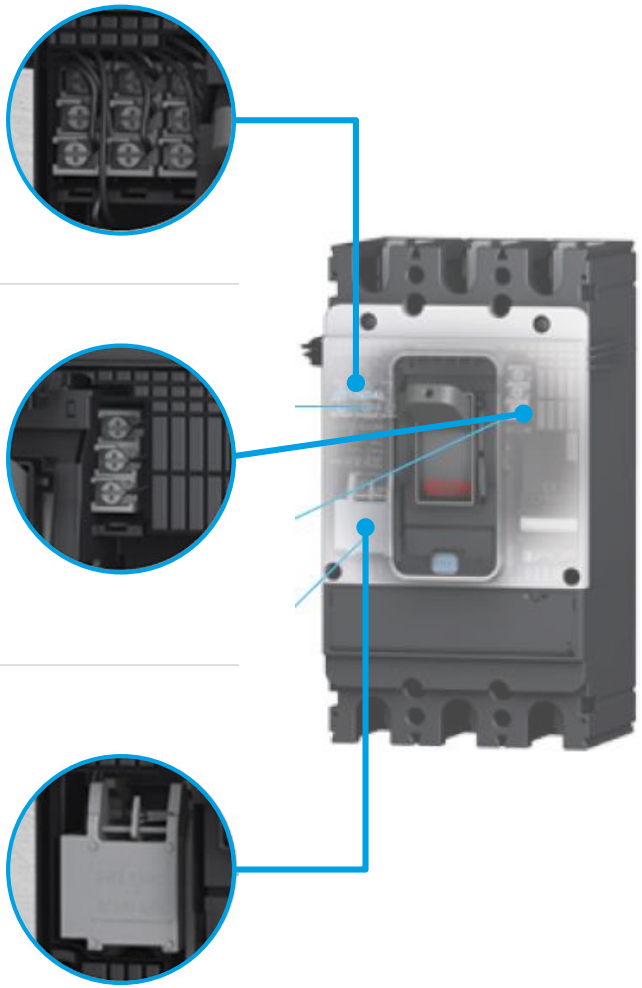
- Indicates the ON/OFF status of the circuit breaker contact
- Status is OFF during TRIP
- Comprised of C contact

Trip Alarm Switch (ALT)

- Only activated when the circuit breaker has tripped due to an overload, short circuit or operation of shut trip switch
- Returns to original state when breaker has been reset
- Comprised of C contact

SHT /UVT

- Shunt trip device (SHT) is a device that remotely trips the circuit breaker by applying voltage to both terminals of the coil
- In case the circuit voltage drops to less than 35 % of the rated voltage(Un), UVT automatically initiates a trip in the circuit breaker to prevent damage to the load

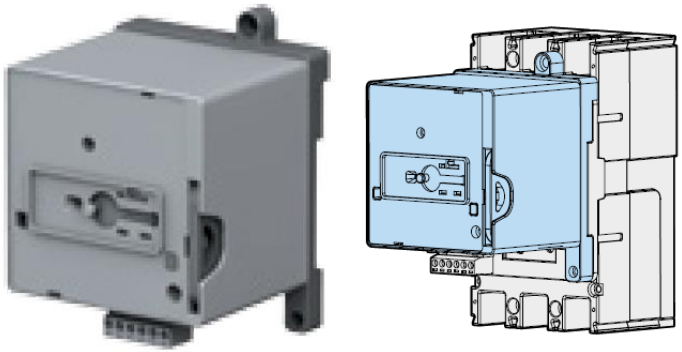


Accessories

Mechanical Accessories

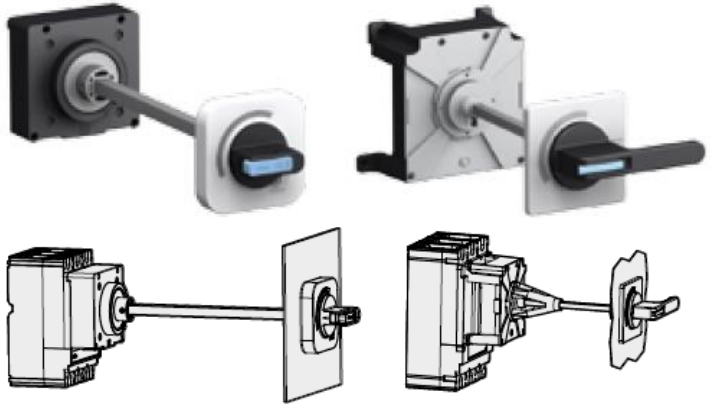
Motor Operator

- This device is used for turning the circuit breaker ON/OFF in remote position



Extended Rotary Handle

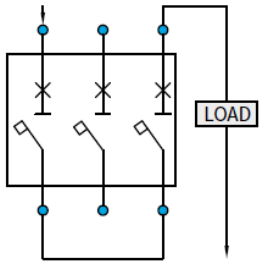
- It is suitable if the distance between the circuit breaker and the panel door is long. The handle is installed to the door of the panel and there is no trip-button function



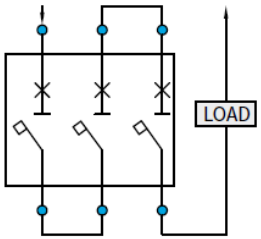
Accessories

Connection diagrams valid

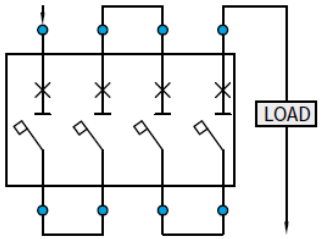
Networks insulated from earth



2P



3P



4P

Connection

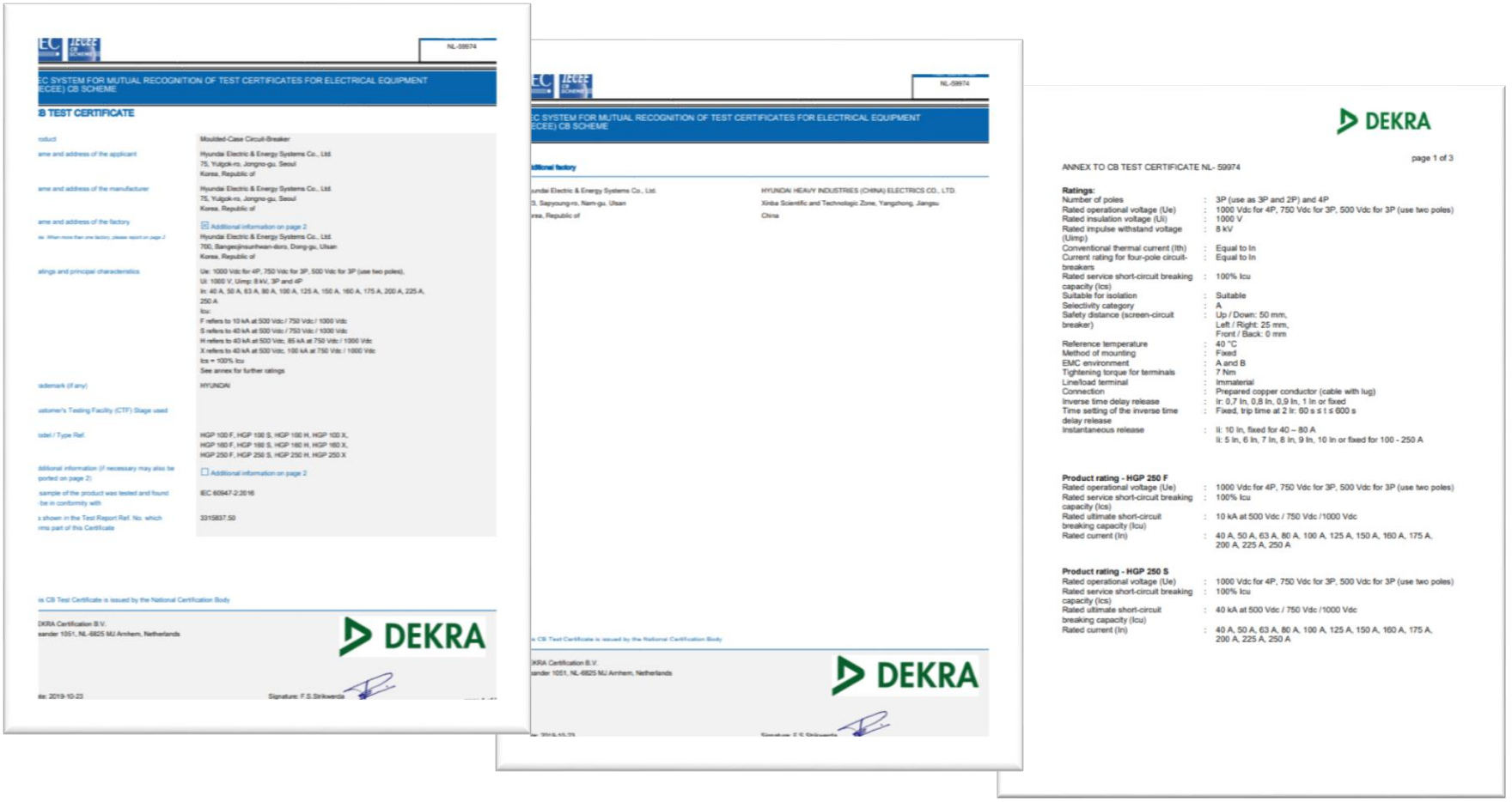
- When connecting cables, please use a cable wire of at least 60cm. Short cable length may cause excessive heating of the product.
- Failure to comply with the conditions above may result in damage to the product and system
- After connecting the busbar or cable, insert a barrier between the phases that are not commoned

Certificates

IEC standards

IEC 60947-2 and Annex. P CB certification by DEKRA

Annex P : DC circuit-breakers for use in photovoltaic (PV) applications



EC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (ECEE) CB SCHEME

B TEST CERTIFICATE

DEKRA

ANNEX TO CB TEST CERTIFICATE NL- 59974

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Ratings:

Number of poles	:	3P (use as 3P and 2P) and 4P
Rated operational voltage (Ue)	:	1000 Vdc for 4P, 750 Vdc for 3P, 500 Vdc for 3P (use two poles)
Rated insulation voltage (Ui)	:	1000 V
Rated impulse withstand voltage (Uimp)	:	8 kV
Conventional thermal current (Ith)	:	Equal to In
Current rating for four-pole circuit-breakers	:	Equal to In
Rated service short-circuit breaking capacity (Ics)	:	100% Icu
Suitable for isolation	:	Suitable
Selectivity category	:	A
Safety distance (screen-circuit breaker)	:	Up / Down: 50 mm, Left / Right: 25 mm, Front / Back: 0 mm
Reference temperature	:	40 °C
Method of mounting	:	Fixed
EMC environment	:	A and B
Tightening torque for terminals	:	7 Nm
Line/load terminal	:	Immaterial
Connection	:	Prepared copper conductor (cable with lug)
Inverse time delay release	:	Ir: 0,7 In, 0,8 In, 0,9 In, 1 In or fixed
Time setting of the inverse time delay release	:	Fixed, trip time at 2 Ir: 60 s ≤ t ≤ 600 s
Instantaneous release	:	Ii: 10 In, fixed for 40 – 80 A Ii: 5 In, 6 In, 7 In, 8 In, 9 In, 10 In or fixed for 100 - 250 A

Product rating - HGP 250 F

Rated operational voltage (Ue)	:	1000 Vdc for 4P, 750 Vdc for 3P, 500 Vdc for 3P (use two poles)
Rated service short-circuit breaking capacity (Ics)	:	100% Icu
Rated ultimate short-circuit breaking capacity (Icu)	:	10 kA at 500 Vdc / 750 Vdc /1000 Vdc
Rated current (In)	:	40 A, 50 A, 63 A, 80 A, 100 A, 125 A, 150 A, 160 A, 175 A, 200 A, 225 A, 250 A

Product rating - HGP 250 S

Rated operational voltage (Ue)	:	1000 Vdc for 4P, 750 Vdc for 3P, 500 Vdc for 3P (use two poles)
Rated service short-circuit breaking capacity (Ics)	:	100% Icu
Rated ultimate short-circuit breaking capacity (Icu)	:	40 kA at 500 Vdc / 750 Vdc /1000 Vdc
Rated current (In)	:	40 A, 50 A, 63 A, 80 A, 100 A, 125 A, 150 A, 160 A, 175 A, 200 A, 225 A, 250 A