

The background of the entire page is a vibrant, futuristic cityscape at night. It features a dense cluster of skyscrapers, some of which are illuminated with bright blue and white lights. A flying saucer is visible in the upper left sky. In the lower left, there is a large, illuminated soccer stadium. The overall color palette is dominated by blues, purples, and oranges, creating a high-tech, digital atmosphere.

SUNLIGHT

A **CHNT** COMPANY

CHNT

Technical Info

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Corporate Profile



Sunlight Electrical established in 1970, grew business into manufacturing of low voltage switchboards, distribution boards and control panels.

With commitment to productivity and quality, Sunlight Electrical became the first switchboard manufacturer to use CNC punching machine to supply quality range of electrical panels at global level standard.

SUNLIGHT latest low voltage switchboard, using CHINT low voltage components, provides high security and reliability. It has been independently verified to prove compliance to IEC 61439-1 and -2.

Design verification carried out to IEC 61439, Sunlight Electrical is an OEM for SUNLIGHT switchboards offering internal components to suit customers' choice:

- ABB - Chint
- Mitsubishi - Schneider Electric - Siemens
- Series FORTI
- Fixed - Plug-in
- Withdrawal - MCC - PDU

Our Vision & Mission



Reliability



Our Vision

First in choice, for energy distribution solutions.

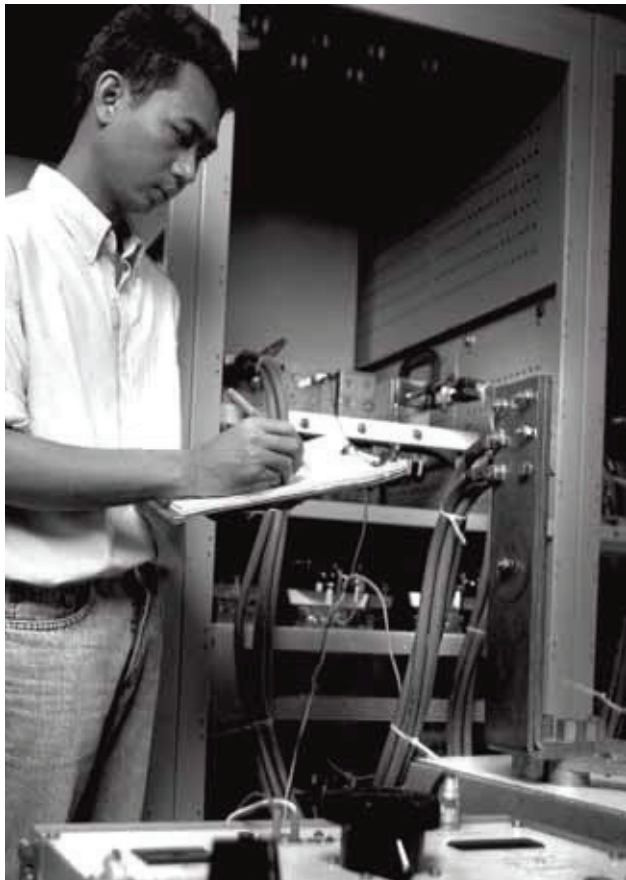
Our Mission

- To give customers more choices in products and services.
- To enhance availability of energy distribution in digitalized world.
- To develop people and build competency.

Almost half a century experience in the electrical industry. The Sunlight reputation has been built on reliability and value. We have successfully completed an extensive and diverse range of projects from both private and public, mechanical & electrical consulting engineers.

We attribute our reputation for reliability to a tightly controlled manufacturing process, switchgear designs that have been rigorously type-tested by ASTA (Association of Short Circuit Testing Authority based in UK) according to internationally recognised International Electrotechnical Commission (IEC) standards, and finally the use of quality components from internationally renowned manufacturers that comply with various technical specifications.

Our most distinctive recognition, however, comes from the fact that two thirds of our growing business is made up of repeat customers who are confident in our ability to deliver high standard products at competitive rates.



The secret behind Sunlight Electrical's success is our unique management philosophy comprising of a tri-focal approach.

Naturally, it follows that a focus on quality is equally important throughout the process from design, fabrication, assembly, testing and commissioning, right up to service support.

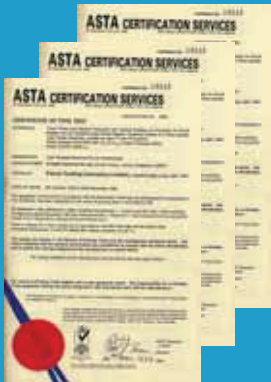
Customer focus is the prime consideration for us. To this end, we provide tailor-made solutions optimised to suit the individual's needs and situation, responsive after-sales service, and an open management structure that allows for flexibility in servicing our customers.

In addition, we provide on-time site testing and commissioning of products, and where required, we are able to provide a 24-hour standby service.

Employee welfare & development is our third focus. Through an emphasis on staff training and career development as well as an open working environment, our customers are served by a team of dedicated professionals working cohesively and seamlessly.



Sunlight Electrical's technical excellence and competency have been recognised in a few important ways. We have achieved a comprehensive range of ASTA type-test certification from 250A to 5000A which enables us to participate in most projects. We have also been awarded the ISO 9000 certification by the Productivity and Standards Board of Singapore (PSB). Committed to improvement, we continually seek ways to utilise technology and processes for product enhancement.





The GREEN Message

Energy distribution with SUNLIGHT power distribution products such as switchboard or motor control centres are a spirit of innovation and pursuit of engineering excellence. SUNLIGHT continually develops patented designs and products that are designed verified to IEC 61439 series.

Our commitment to sustainability for quality and environmental - reflects in our Green switchboards. We obtained the SGBC certification that testifies our commitment.

SUNLIGHT salutes our partners as we meet our goals for sustainability. Together we can build a brighter tomorrow for our future generations.



Efficiency and quality are the hallmarks of our manufacturing plants. Equipped with state-of-the-art machinery for the entire Switchboard fabrication process, our Switchboard design has been refined to achieve its present full modular system.

CNC machines first shear, punch, cut and bend sheet metal to create frames, covers and sheet metal parts. These are then powder-coated with an in-house conveyerised electrostatic powder-Coating system and assembled into panels for housing Switches, busbars and other electrical components to form an electrical switchboard. To reduce computational errors, the specifications of the metal parts are pre-calculated and programmed before fabrication.

Over the years, the design has been enhanced to achieve improved rigidity, ease of assembly and efficient material usage in our switchboard assembly process.



OVERVIEW OF FORTI WITHDRAWABLE SYSTEM

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PARAMETERS OF SWITCHBOARD



	ACB Incoming Panel	ACB Outgoing Panel	Capacitor Panel	Fixed Panel	Drawer Panel
Installation System	Fixed/Withdrawable	Fixed/Withdrawable	Fixed	Fixed	Withdrawable
Function	Main incoming	Outgoing Distribution	Power factor corrections	Outgoing Distribution Motor Control Centre	Outgoing Distribution Motor Control Centre
Rated Current(In)	Up to 6300A	Up to 3200A	Up to 500 kVAr with choke 600 kVAr without choke	Up to 800A	Up to 630A
Cable Entry	TOP / Bottom	TOP/Bottom	Internal wiring	Rear/Side	Rear/Side
Cabinet Width(mm)	700/800/1200	700/1200	700	400/450500/600	600
Form of Separation	Form 2a/2b/3a/3b/4a/4b				
IP, Ingress Protection	IP 42 or 43				

TECHNICAL PARAMETER TABLE

Technical specifications		
Application		Energy distribution
		Motor control Centre
Standard Specifications	Low Voltage Switchgear and Controlgear Assemblies	IEC 61439-1&2
Design Verification	By Test, Comparison and Assessment	
Service conditions	Ambient air temperature	+40 ° C to -25 ° C
	Relative humidity	50 % at +40 ° C 100 % at +25 ° C
	Pollution degree	3, standard
	Altitude	Not exceeding 2 000 m
Installation site		Indoor or outdoor
Constructional Specifications		
Cable access		Top/Bottom/Rear/Side
Connection		Direct/Cable lugs/Busbar
Form of Separation		T2/3/4 of a/b
Ingress Protection		IP 42/IP43
Dimension (mm)	Height	2005/2205
	Width	400/450/500/600/700/800/1200
	Depth	650/750/1050/1250/1450
Surface protection	Frame	Al-Zn or electro-galvanised
	Metal sheet	EG or epoxy powder coated
	IColour of powder coating, standard	RAL 7035 or customised
Average weight per panel		750KG
Electrical Specifications		
Rated Operational voltage (Ue)		240/415 V
Rated Insulation voltage (Ui)		1000 V
Rated Impulse voltage (Uimp)		8 kV
Rated current (InA)		8kV
Rated short-time withstand current (Icw)		8100 A maximum
Rated frequency		50/60 Hz or DC
Overvoltage category		IV
Main busbar rating		8100 A
Distribution busbar rating		4000 A
Internal arc fault protection		IEC TR 61641

DESIGN VERIFICATION

The following table provides the items required for all tests	Verification by Design Standards	Verification by Calculation	Certification Test
Strength Of Materials And Core Components	√	-	-
Protection Class Of Frame	√	-	√
Electrical Clearance And Creepage Distance	√	√	√
Protection against electric shock and integrity of protection circuit	√	√	√
Dielectric properties	√	√	√
Limit of temperature rise	√	√	√
Short Circuit	√	√	√
Mechanical operation	√	√	√

DESIGN OF FORTI WITHDRAWABLE SWITCHGEAR

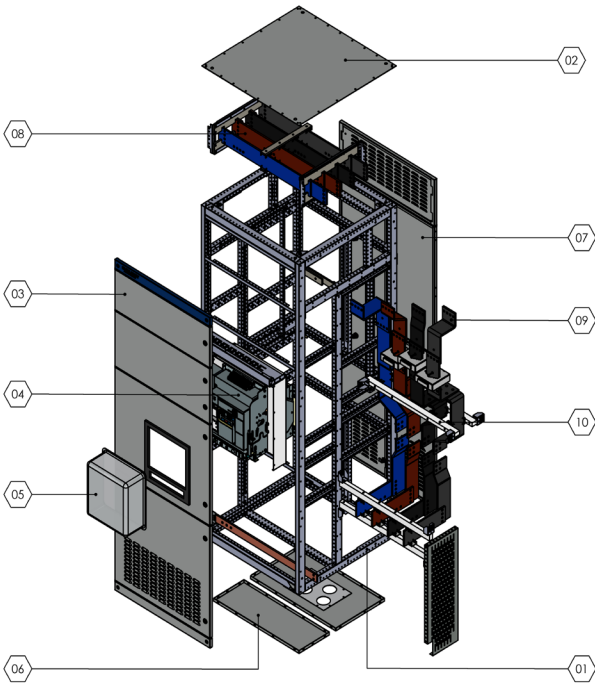
Characteristics of Switchgear..... 17

Functional Unit 18

Switchgear Dimensions 19

Frame Parameters..... 20

CHARACTERISTICS OF SWITCHGEAR



Frame

- 01 Bottom Plate
- 02 Top Plate
- 03 Front Door
- 04 Rear Door
- 05 Frame
- 06 Vertical Channel Frame
- 07 Vertical Channel Door
- 08 Vertical Channel Unit
- 09 ACB Unit
- 10 Control Unit

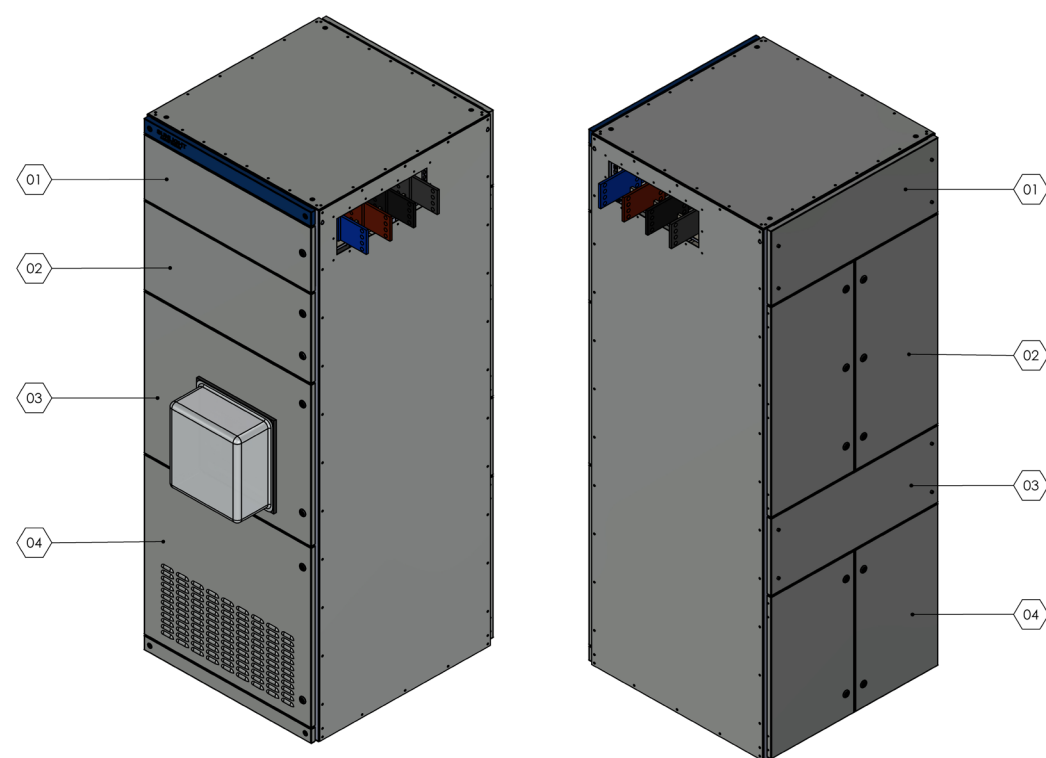
Busbar

- 11 Main Busbar
- 12 Distribution Busbar
- 13 Connection Busbar
- 14 Vertical Busbar

Internal metal partition

- 15 Plate for open door IP20
- 16 Partition between panel
- 17 Partition between unit
- 18 Partition between control cable unit

FUNCTION UNIT



01 Main Busbar Unit

Including NGC8 busbar system, each for a single panel.
The phase is insulated by air and connected with the distribution busbar by screw.

02 Control Line Unit

Contains control elements such as meters, lights, buttons, etc.
Including all control loops cable
Terminal used in secondary control circuit

03 Switching Unit

Containing components such as ACB or MCCB and cables
or copper bars for connection
The phase is insulated by air and connected by screw.

04 Cable Unit

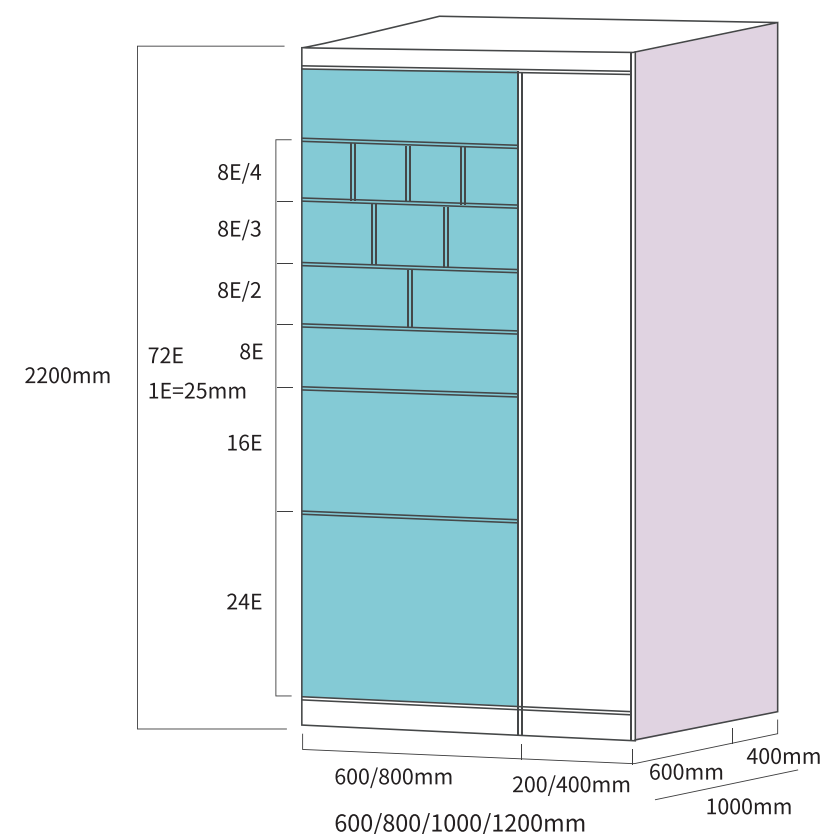
Including control cables, terminals, power cables and connecting components

Cable feeding can be up or down

05 Spare Unit

For Standby and Late Extension

SWITCHGEAR DIMENSIONS



01 ACB Switchboard Size

Foundation size: W=600 or 800 mm D=600mm H=2200mm

Switchboard Width Expansion Channel Size: :W=200 or 400mm D=600mm H=2200mm

Switchboard Deep Expansion Channel Size: W=600 or 800 mm D=400mm H=2200mm

Through the combination of various expansion channels, different outgoing modes can be realized.

02 Drawer/Fixed Switchboard Size

Foundation size: W=600 mm D=1000mm H=2200mm **Outlets:** Rear
W=1000 mm D=600mm H=2200mm **Outlets:** Side

Drawer Unit Size: 8E/4 3/8E 8E/2 8E 16E 24E

Fixed Unit Size: 8E 12E 16E 24E

FRAME PARAMETERS

Frame Structure

Frame structure is an unique profile of enhanced mechanical strength, with increment dimension of 25 mm. Each a modular unit, denoted by 1E (=25mm). Our design provides greater flexibility in event of non-standard design requirement is needed.

The frame and all supporting parts are using strong self-tapping screws to achieve reliable connection and ease for site modification, with excellent safety.

The frame and all supporting parts are made of steel with aluminum-zinc plating finish; to ensure long-term corrosion resistance such as pssing the salt spray test.



FRAME PARAMETERS

Shell Structure

The shell of NGC8 is made of cold-rolled steel plate treated by special spraying process, with customizable color and maximum strength.

The patented hinge with novel design can easily change the opening direction of the cabinet door from left to right, and the maximum opening can reach 130° .

According to the requirements of Form class, each functional unit has an independent door plate. Door plate, top plate, bottom plate and side plate are installed with self-tapping screws. Different protection grade schemes are available according to different customer requirements, up to IP54.



Technical parameters

Frame	The opening Angle of the door	Up to 130°
	Frame height	2200mm
	IP class	Up to Ip54
Busbar	The length of the busbar	Single cabinet width for a section
	Rated current	Up to 6300A
	Rated peak withstand current(Ipk)	Up to 220kA
	Rated short-term withstand current(Icw)	Up to 100kA

DESIGN OF DRAWER

Characteristics of Drawer.....

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Introduction of Drawer Unit

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Characteristics of 8E Drawer.....

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Characteristics of 8E/2 Drawer.....

27

Characteristics of Vertical Channel.....

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CHARACTERISTICS OF DRAWER



The specifications of NGC8 drawer unit are selected according to the current level, which can be freely combined to achieve the most compact scheme of panel. In all locations of drawer unit (work, test, disconnect), the door panel of drawer unit is closed, even if the failure can meet the higher personal security.

Drawer units are highly secure and flexible. The maintenance time is short, with few maintenance tool, and small demand of qualified personnel.

INTRODUCTION OF DRAWER UNIT

The drawer unit is designed for easy operation and maintenance. To ensure quick uptime, spare drawer can be kept for quick substitution with high flexibility. The size and rating of drawer unit is designed to suit wide applications of different rating or different mode of motor starting methods.

A single modular panel can be equipped with up to 9 layers of 8E/4, which equals to 36 feeder circuits. The narrow width of the withdrawal units enables as many as possible the number of drawers to be fitted for the same footprint.

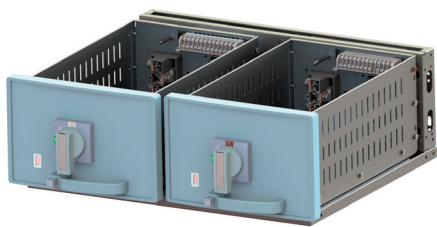


8E/4 Drawer Unit

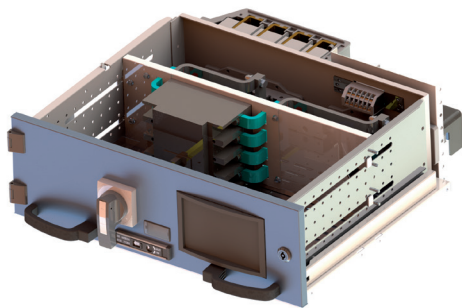


8E/3 Drawer Unit

INTRODUCTION OF DRAWER UNIT



8E/3 Drawer Unit



8E Drawer Unit

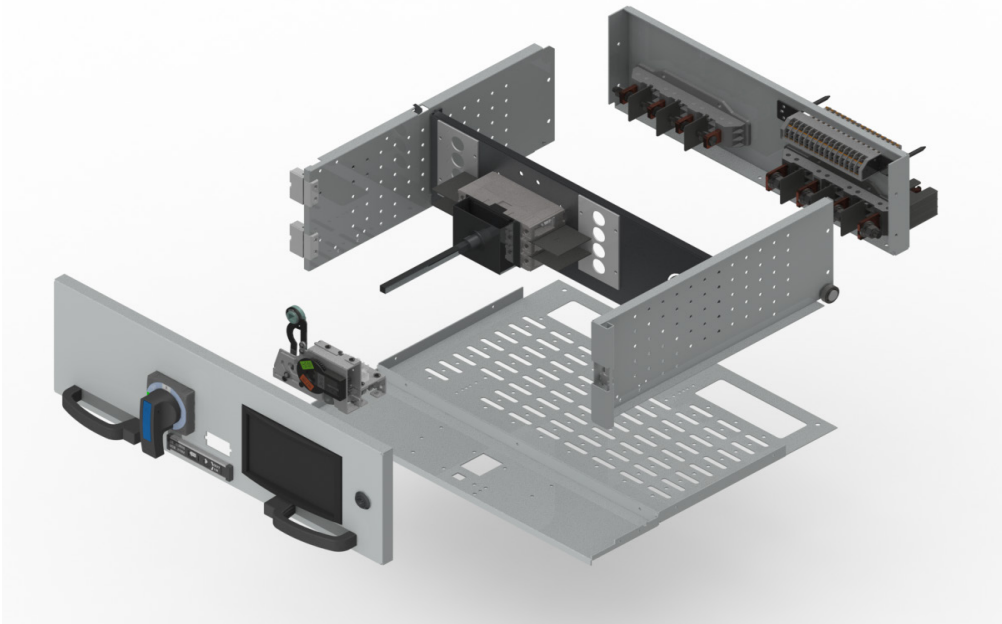
The drawer of NGC8 system is operated by multi-function handle. Drawing out a drawer does not require any special tools or unlocking devices. The drawer can be moved to the test, separation and working position without opening the door. Taking into account the prevention of misoperation and personal safety of operators, drawer units can be locked separately in separate positions. It takes less than 1 minute to replace a drawer when the on-site operation process permits, and the replacement of drawers can be carried out when the equipment is live.

All drawers are locked and transformed by patented mechanical manipulators. All once and twice plug-ins can self-locate without additional tools. All position instructions are clear thanks to the mechanical operation mechanism indicator.

System characteristics

- No need to open the door for all operations.
- It takes less time to replace the module and no special tools are needed.
- The drawer unit has an independent coding system to prevent confusion with the drawer of the same specification.
- High loop density and small area

CHARACTERISTICS OF 8E DRAWER



- 01

Front Door
- 02

Left Plate
- 03

Right Plate
- 04

Bottom Plate
- 05

Layer Baffle
- 06

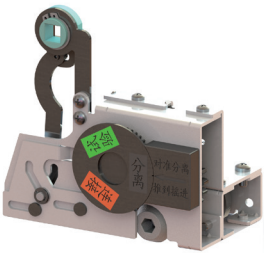
Guide Rail
- 07

Hand-operated Mechanism
- 08

Open-type Instrument Panel
- 09

Half-Function Unit
- 10

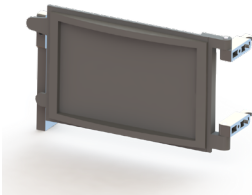
Outgoing Unit



Hand-operated Mechanism



Mechanism Operating Handle



Open-type Instrument Panel

CHARACTERISTICS OF 8E/2 DRAWER

- 01

Front Door
- 02

Left Plate
- 03

Right Plate
- 04

Bottom Plate
- 05

Layer Baffle
- 06

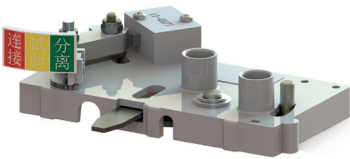
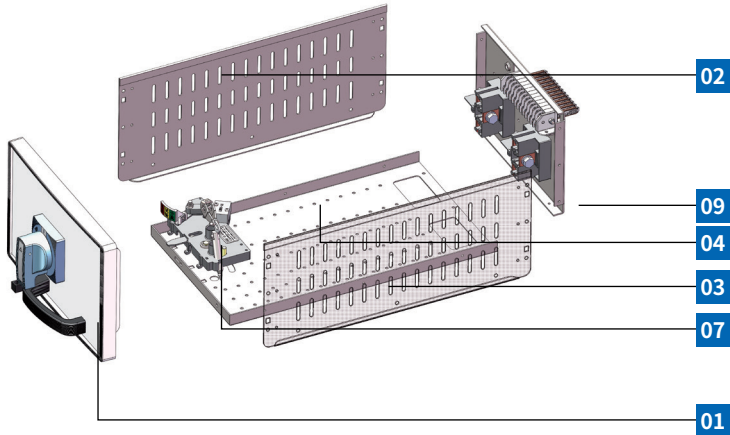
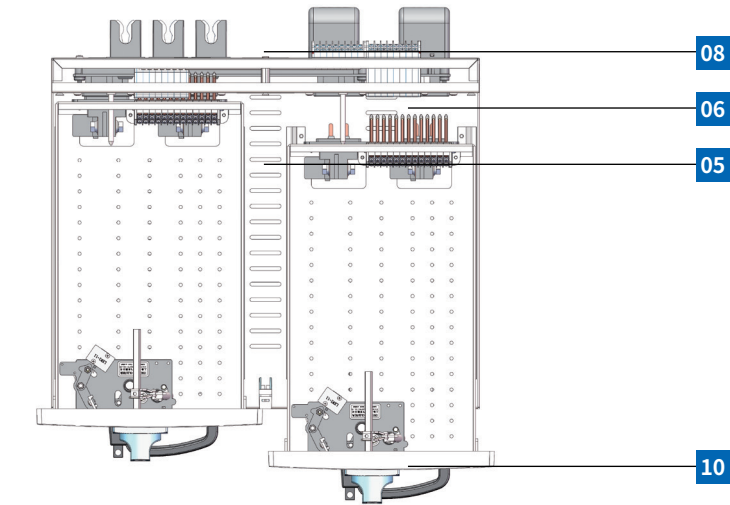
Guide Rail
- 07

Hand-held Mechanism
- 08

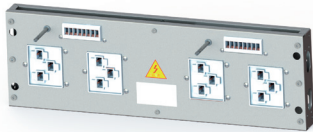
Rear Outgoing Wire Transfer Unit
- 09

Rear Plate
- 10

Type-A Pull Handle



Hand-operated Mechanism

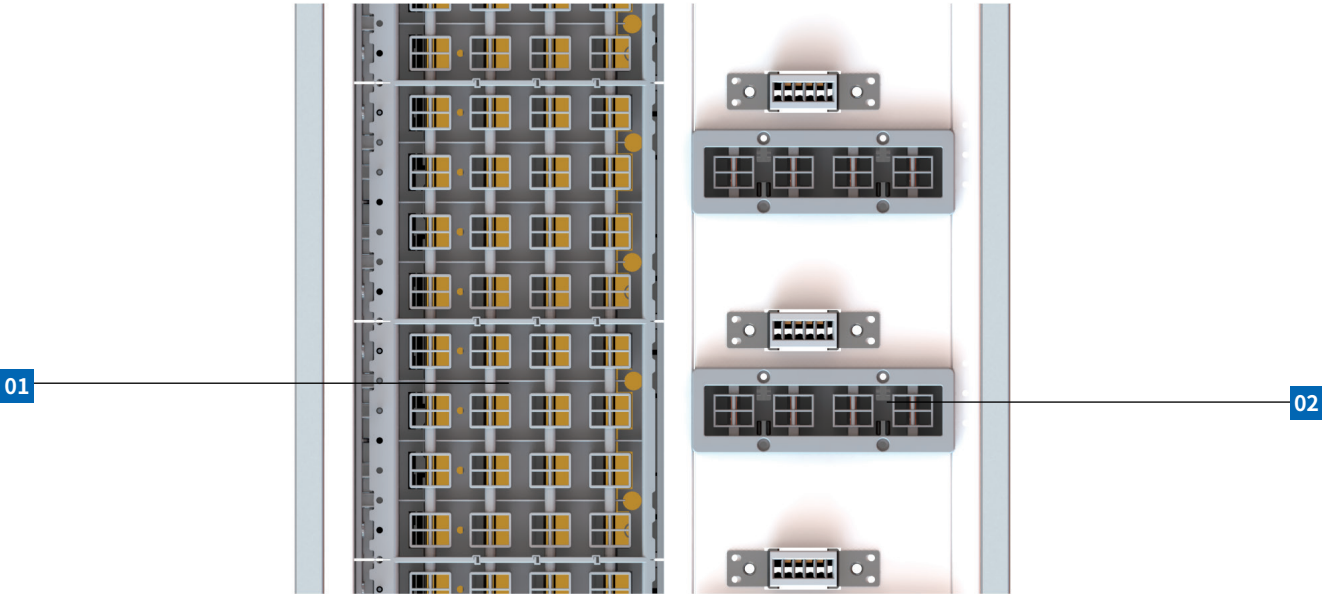


Hand-operated Mechanism



Hand-operated Mechanism

CHARACTERISTICS OF VERTICAL CHANNEL



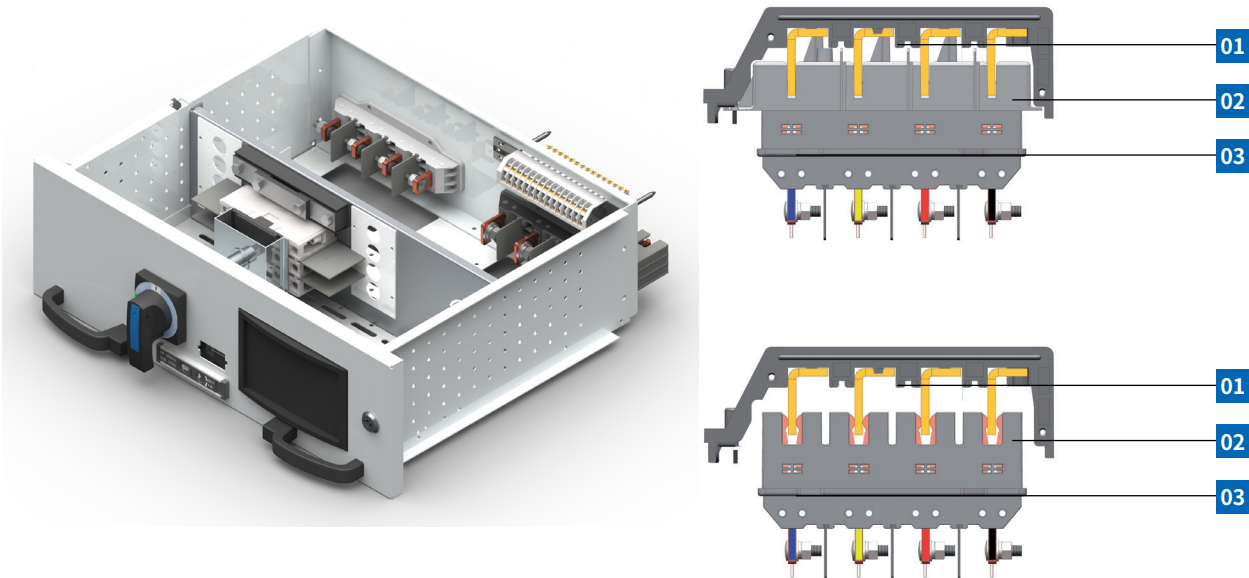
01 Incoming unit

Vertical Channel
The specially formed vertical busbars are installed at the back of the panel to enable the smooth engagement of the connector fitted at the drawers. The vertical busbars are embedded and installed in the multi-function board, to ensure the separation of busbar and functional units for safety.
The multi-function board is made of halogen-free insulation material, which meets the requirement for flame retardant and self-extinguishing properties to provide good environmental compliance. The use of insulation material provides good clearance distance and separation so that no arcing can happen between phases, or phase and drawer unit.

02 Outgoing unit

Consists of the fixed connectors and the motor control devices, and safety protection such as circuit breakers and isolators.
The maximum outgoing is rated current up to 630A

CHARACTERISTICS OF VERTICAL CHANNEL



Product features

- Complete phase isolation to ensure good connection with distribution busbar
- Contact silver plated to ensure conductivity
- Operating life up to 1000 times

Incoming Unit

01 L Busbar

According to the actual length of use can be customized

02 Main circuit movable plug-in

Rated Current	Incoming	Outgoing(Rear)	Outgoing(Side)
125A 3P/4P	√	√	√
250A 3P/4P	√	√	√
400A 3P/4P	√	√	√
630A 3P/4P	*	√	√

03 Multi-function Board

200mm is a free combination, up to 1800mm

APPENDIX

Components

Typical Performance

Typical Scheme

Order Form

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COMPONENTS

NA8 Air Circuit Breakers



Rated current of air circuit breakers ranges from 200A to 6300A.

They are mainly used in the distribution gird, and provide the protection and control functions.

There are fixed and draw-out types.

The draw-out circuit breaker has the isolation function.

For more information, please refer to product catalog.

Main Technical Parameters										
Shell grade rated current Inm(A)	1600		2500				4000		7500	
Rated insulation voltage Ui(V)	1000									
Rated impulse withstand voltage(kV)	12									
Number of poles	3P/4P									
Flashover distance mm	0									
Rated operational voltage Ue(V)	N:400V	N:690V	N:415V	H:415V	N:690V	H:690V	H:415V	H:690V	415V	690V
Rated ultimate short circuit breaking capacity Icu (kA)	55	30	90	85	50	65	100	85	135	100
Rated service breaking capacity Ics(kA)	42	25	80	85	50	65	100	85	135	100
Rated ultimate short circuit breaking capacity Icw (kA)1s	42	25	65	85	50	65	100	85	135	100
Rated ultimate short circuit breaking capacity Icw (kA)3s	-	-	-	-	50	65	75	75	-	-

COMPONENTS

NM8N Molded Case Circuit Breaker



Rated current of molded case circuit breakers ranges from 16A to 1600A.

They are mainly used in the distribution gird, and provide the overload, short-circuit and undervoltage feeder protection of the circuit and electrical equipments.

There are two kinds of releases, i.e. thermal-magnetic and electronic release.

For more information, please refer to product catalog.

Main Technical Parameters						
Shell grade rated current Inm(A)	125	250	400	630	800	1600
Number of poles	3P/4P					
Rated insulation voltage Ui(V)	800					
Rated impulse withstand voltage(kV)	8					
Rated operational voltage Ue(V) AC 50/60Hz	690					
Rated ultimate short circuit breaking capacity Icw (kA)max	25	50	70	100	100	150
Rated service breaking capacity (Ics=%Icu)	100					
Dimension(mm)W×H×L/3P	90×140×79	105×157×88	140×255×113	140×255×113	210×370×196	210×370×196
Dimension(mm)W×H×L/4P	120×140×79	140×157×88	185×255×113	185×255×113	280×370×196	280×370×196
Weight (kg)/3p	1.2	2.1	7.5	7.5	17.5	17.5
Weight (kg)/4p	1.6	2.8	10	10	23	23

COMPONENTS

NVF300M Series Inverter



NVF300M Soft starters requiring external bypass contactors. The voltage series is 380V, and the power specifications are 7.5kW to 500kW. It has the characteristics of strong load adaptability, stable and reliable operation. It is widely used in motor transmission equipment in metallurgy, petroleum, fire protection, mine, water supply, municipal, food, cement, petrochemical and other fields. Traditional Star-Triangle Start and Self-Lotus Decompression Start are ideal renewal products.

For more information, please refer to product catalog.

Universal Inverter



Universal frequency converter, using speed sensorless vector control technology, has the characteristics of small, portable, fast operation and excellent performance. It is widely used in various small and medium-sized mechanical equipment, such as air conditioning and refrigeration, building water supply, logistics machinery, ceramic machinery, etc.

For more information, please refer to product catalog.

TYPICAL PERFORMANCE



Project Name:
Zhejiang petrochemical 40 million tonsrefinery integration project

Project Introduction: As the main electrical equipment supplier of this project divided in four batches. CHINT electric will provide 1200 sets of low-voltage switchgear and 150 sets of medium-voltage switchgear, among which some of them have been supplied smoothly according to the delivery date.

Because the project is located in Zhoushan island area, the anti-corrosion ability of the product has received higher requirements. CHINT electric designed the technical scheme together with the users, and all the switch cabinets provided by this project were specially treated to cope with the high salt fog and high humidity environment.



Project Name:
Wuhan tianhe airport phase III expansion project terminal project

Project Introduction: Wuhan Tianhe international airport is one of the busiest airports in China. The phase III expansion project of the airport is a key project of Hubei province and Wuhan city.

The project started in June 2013 and passed the completion acceptance in June 2017. Aiming at 2020, the project is designed to meet the annual passenger throughput of 35 million, cargo and postal throughput of 440,000 tons and annual takeoff flights of 404,000.

CHINT's products for this project are NGC8 Switchgears for a total amount of \$3.53 million.

TYPICAL PERFORMANCE



Project Name:
Intercontinental Shanghai Wonderland Hotel

Project Introduction: CHINT participated in the construction of this special building as the hotel's power distribution equipment supplier and provided the hotel with a full set of lowvoltage power distribution equipment.As the hotel is located below the horizon, the environment is extremely special, which required high reliability and security of power distribution operation.

CHINT adopted multi-process special anti-corrosion treatment in the process, and the anti-corrosion performance of the equipment got improved by more than 50%. Through many technical innovations design, simulation analysis, optimization of the structure design. CHINT succeeded in ensuring that the equipment has a level 9 seismic capacity.



Project Name:
Pudong financial plaza project

Project Introduction: The project covers a total land area of 48,530 square meters and a total construction area of 464,677 square meters, including three grade office buildings, a large senior business center, a ground bus hub, a ground floor underground business, a three-floor underground parking garage and supporting equipment room. When completed, the project will become a landmark in the middle of century avenue.

TYPICAL PERFORMANCE



Project Name:
Indonesia ruipu 600,000 tons ferrochrome and 700,000 tons stainless steel cold

Project Introduction: Indonesia ruipu 600,000 tons ferrochrome (matching heat recovery coking power) and 700,000 tons stainless steel cold rolling project is a production capacity cooperation between China and Indonesia, which is highly concerned by the local government of Indonesia. The project is located in Bahodopi town, Morowali county, central sulawesi island, Indonesia, close to the nickel mining area of sulawesi mining company.



Project Name:
Office expansion project of well-known software giant company

Project Introduction: This company is located in the latest phase of Singapore Central Business district (can be described as the “new Central Business district. This Company is expanding its business in Singapore and need more power supply ; thus it is increase the electrical system for its office expansion .

Couple with the Long term relationship with the Electrical contractor plus the well known "Sunlight" name for its brand image, product quality and responsive aftersales service , Sunlight was again selected for the office expansion of this world wide well known giant software company .

TYPICAL PERFORMANCE



Project Name:
AUSTRALIAN NATIONAL UNIVERSITY (AUSTRALIA)

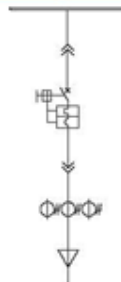
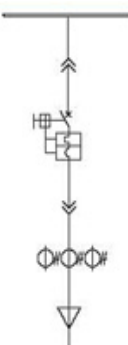
Project Introduction: 4x MSB PANEL-1250A supplied to project ANU. Australian National University is a national research university located in Canberra, the capital of Australia. Its main campus in Acton encompasses seven teaching and research colleges, in addition to several national academies and institutes.



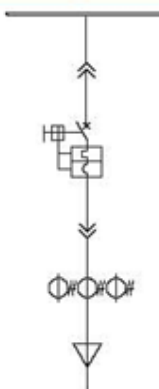
Project Name:
MIM HYDRO MINING (AUSTRALIA)

Project Introduction: 2x MCC PANEL-4000A supplied to Project MIM HYDRO MINING under National Pump & Energy (NPE). NPE are one of Australia’s leading pump, power and compressed air hire equipment specialists. It has an extensive range of pumps, generators and compressors for hire or sale including pontoon pumps, silenced pumps, generators, air compressors and associated equipment.

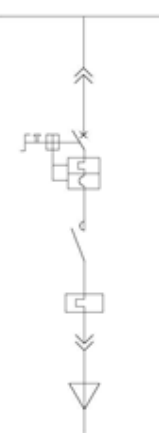
SUNLIGHT WITHDRAWABLE CONFIGURATION,
FUSELESS LOAD FEEDERS SELECTION GUIDE

Rated Current(A)	Mode		Incoming/Outgoing ACB (3P/4P)						
			Width (mm)			3P 4P			
			Width Depth			Width			
Primary Schematic Diagram									
1600	NA8-1600			800		800			
2500	NA8-2500			800		1000			
3200	NA8-3200			800		1000			
Primary Schematic Diagram	Frame	Current	Breaker		Contactor		Overload		Height
	A	A	Model		Model		Model		mm
	125	40	NM8-125S		NA		NA		200
	125	50	NM8-125S		NA		NA		200
	125	63	NM8-125S		NA		NA		200
	125	80	NM8-125S		NA		NA		200
	125	100	NM8-125S		NA		NA		200
	250	100	NM8-250S		NA		NA		200
	250	160	NM8-250S		NA		NA		200
	250	200	NM8-250S		NA		NA		200
	250	250	NM8-250S		NA		NA		200
	400	400	NM8-400S		NA		NA		400
	630	630	NM8-630S		NA		NA		550

OUTGOING FEEDER (3P/4P) FIXED AND WITHDRAWABLE

Primary Schematic Diagram	Frame	Current	Breaker	Contactor	Overload	Height
	A	A	Model	Model	Model	mm
	125	40	NM8-125S	NA	NA	200
	125	50	NM8-125S	NA	NA	200
	125	63	NM8-125S	NA	NA	200
	125	80	NM8-125S	NA	NA	200
	125	100	NM8-125S	NA	NA	200
	250	100	NM8-250S	NA	NA	200
	250	160	NM8-250S	NA	NA	200
	250	200	NM8-250S	NA	NA	200
	250	250	NM8-250S	NA	NA	200
	400	400	NM8-400S	NA	NA	400
	630	630	NM8-630S	NA	NA	550

ODOL STARTER WITHDRAWABLE (DIRECT ON LINE) – NORMAL DUTY

Primary Schematic Diagram	Power	Current	Breaker	Contactor	Overload	Height
	kW	A	Model	Model	Model	mm
	≤ 5.5	12	NM8-125	NC1-18	NR2-25	200
	11	21	NM8-125	NC1-25	NR2-25	200
	22	43	NM8-125	NC1-50	NR2-93	200
	45	83	NM8-125	NC1-95	NR2-93	400
	55	99	NM8-125	NC2-115	NR2-150	400
	75	133	NM8-250	NC2-150	NR2-150	400
	90	157	NM8-250	NC2-185	NR2-200	400
	110	195	NM8-250	NC2-225	NR2-630	400
	132	233	NM8-250	NC2-265	NR2-630	400
	160	280	NM8-400	NC2-330	NR2-630	550
	200	340	NM8-400	NC2-400	NR2-630	550

DOL STARTER WITHDRAWABLE (DIRECT ON LINE) – HEAVY DUTY

Primary Schematic Diagram	Power	Current	Breaker	Contactor	Overload	Height
	kW	A	Model	Model	Model	mm
	≤ 5.5	12	NM8-125	NC1-18	NR2-25	200
	11	21	NM8-125	NC1-25	NR2-25	200
	22	43	NM8-125	NC1-50	NR2-93	200
	45	83	NM8-125	NC1-95	NR2-93	400
	55	99	NM8-125	NC2-115	NR2-150	400
	75	133	NM8-250	NC2-150	NR2-150	400
	90	157	NM8-250	NC2-185	NR2-200	400
	110	195	NM8-250	NC2-225	NR2-630	400
	132	233	NM8-250	NC2-265	NR2-630	400
	160	280	NM8-400	NC2-330	NR2-630	550
	200	340	NM8-400	NC2-400	NR2-630	550

DOL STARTER WITHDRAWABLE (DIRECT ON LINE) – NORMAL DUTY

Primary Schematic Diagram	Power	Current	Breaker	Contactor	Overload	Height
	kW	A	Model	Model	Model	mm
	≤ 5.5	12	NM8-125	NC1-18	NA	200
	11	21	NM8-125	NC1-25	NA	200
	22	43	NM8-125	NC1-50	NA	200
	45	83	NM8-125	NC1-95	NA	400
	55	99	NM8-125	NC2-115	NA	400
	75	133	NM8-250	NC2-150	NA	400
	90	157	NM8-250	NC2-185	NA	400
	110	195	NM8-250	NC2-225	NA	400
	132	233	NM8-250	NC2-265	NA	400
	160	280	NM8-400	NC2-330	NA	400
	200	340	NM8-400	NC2-400	NA	400

F/R DOL STARTER WITHDRAWABLE (FORWARD/REVERSE DOL) – NORMAL DUTY

Primary Schematic Diagram	Power	Current	Breaker	Contactor x2	Overload	Height
	kW	A	Model	Model	Model	mm
	≤ 5.5	12	NM8-125	NC1-18	NR2-25	200
	11	21	NM8-125	NC1-25	NR2-25	200
	22	43	NM8-125	NC1-50	NR2-93	400
	45	83	NM8-125	NC1-95	NR2-93	400
	55	99	NM8-125	NC2-115	NR2-150	550
	75	133	NM8-250	NC2-150	NR2-150	550
	90	157	NM8-250	NC2-185	NR2-200	550
	110	195	NM8-250	NC2-225	NR2-630	550
	132	233	NM8-250	NC2-265	NR2-630	550

S/D STARTER WITHDRAWABLE (STAR-DELTA) – NORMAL DUTY

Primary Schematic Diagram	Power	Current	Breaker	Contactor	Overload	Height
	kW	A	Model	Model	Model	mm
	≤ 5.5	12	NM8-125	NC1-18	NR2-25	200
	11	21	NM8-125	NC1-25	NR2-25	200
	22	43	NM8-125	NC1-50	NR2-93	400
	45	83	NM8-125	NC1-95	NR2-93	400
	55	99	NM8-125	NC2-115	NR2-150	550
	75	133	NM8-250	NC2-150	NR2-150	550
	90	157	NM8-250	NC2-185	NR2-200	550
	110	195	NM8-250	NC2-225	NR2-630	550
	132	233	NM8-250	NC2-265	NR2-630	400