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# HYOSUNG IPB [Isolated Phase Bus]

Continuous Enclosure Type



# Power & Industrial Systems Performance Group



Hyosung Power Systems has been continuously enhancing customer's value since it started its operations in 1962. With core values focused on customer-oriented management, technological innovation and reliable quality, Hyosung Power Systems has built strong customer relationships based on trust and respect over the years. It promises to continue its quest to provide value-added products that enhances industrial productivity while conserving both energy and environment for clients all over the world.



## Power Systems Performance Unit

### Isolated Phase Bus

- Control Panel
- UHV Power Transformer
- EHV Power Transformer
- Distribution Transformer
- Cast Resin Transformer
- Gas Circuit Breaker
- Gas Insulated Switchgear
- Welding Machine



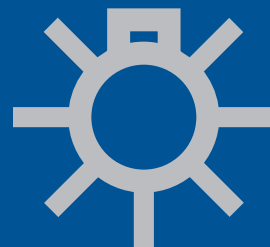
## Industrial Machinery Performance Unit

- Electric Motor
- Gear Reducer
- Generator
- Chemical Process Equipment
- Industrial Machinery
- Ropeway
- CNG Refill Station



# Power Systems Performance Unit

Hyosung Power Systems strives to enhance the lives of people all over the world while conserving earth's natural resources. With the goal to become a **Leading Global Energy Solution Provider**, Hyosung will pave the way towards next-generation technology and green energy solutions.



## CONTENTS

- 04** KEMA Test   **05** Main Features of HYOSUNG IPB  
**09** Specifications of HYOSUNG IPB   **11** Control Panel of HYOSUNG

# HYOSUNG Isolated Phase Bus

In order to meet various requirements for power plant, HYOSUNG designs and manufactures IPB in compliance with IEEE (C37.23).

IPB handles complex parameters for electric, thermal and mechanical calculation.

HYOSUNG selects and designs the optimum layout and size with ANSYS.

HYOSUNG IPB was proven through various domestic/overseas power plants, and HYOSUNG acquired Type TEST from KEMA.

HYOSUNG can design and manufacture the product that fulfills the requirements of the clients 100% in anywhere in the world.



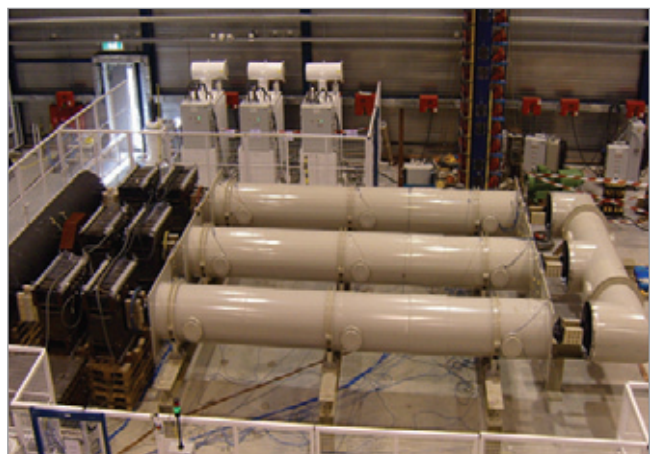
KEMA Certification

## KEMA Test

### Short-circuit test



### Temperature rise test

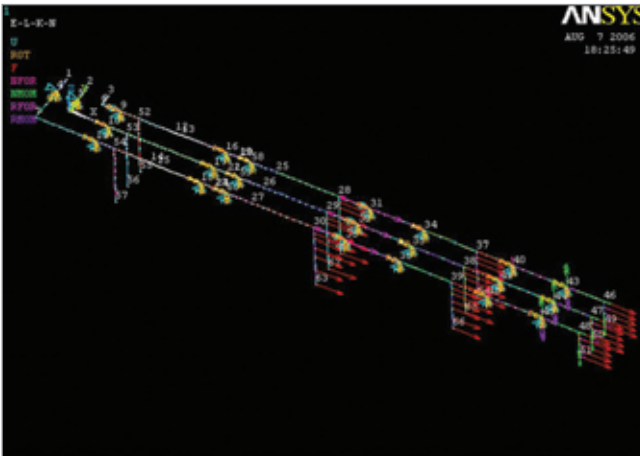


## Main Features of HYOSUNG IPB

HYOSUNG IPB is designed in consideration of safety and convenience of users.

### Stability

HYOSUNG IPB is proven through ANSYS-based simulation and type test that it resists mechanical force caused by short-circuit.



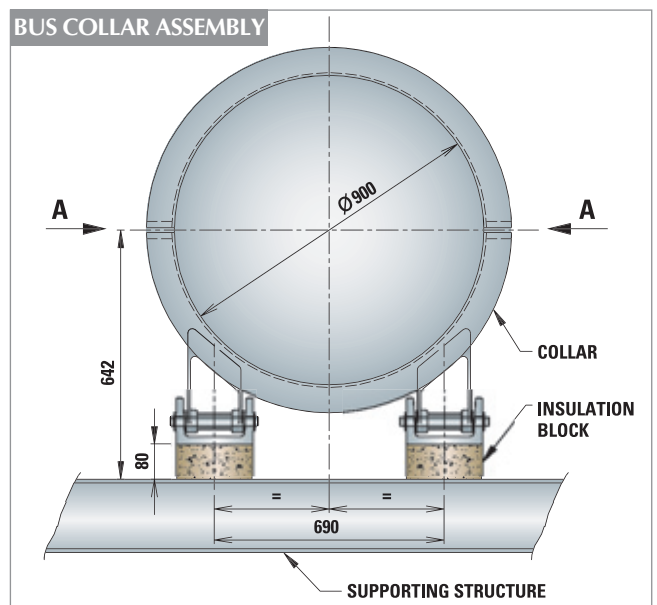
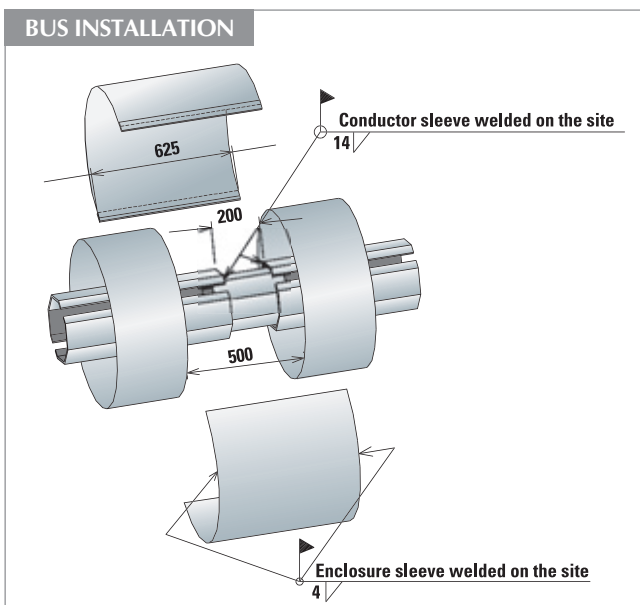
### Maintainability

HYOSUNG IPB is designed such that it requires no maintenance work. If required, it can be easily inspected through the inspection cover.



### Easy installation and reduced installation period for enhanced economic efficiency

Minimum number of joints saves installation time and cost.





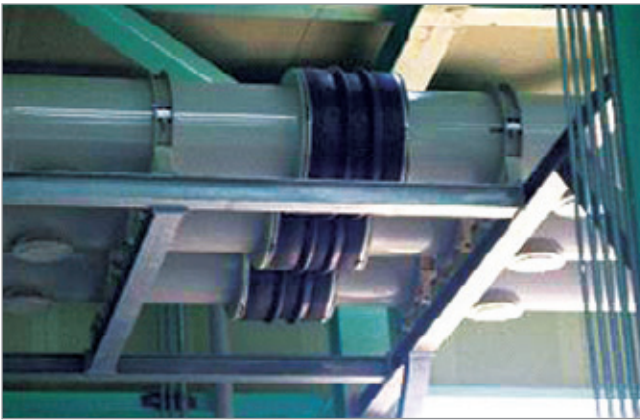
# IPB(Isolated Phase Bus)

## Main Features of HYOSUNG IPB

HYOSUNG is the only manufacturer that can design IPB in Korea.

### Conductor

Flexible connector between bus and in the terminal, enabling expansion and contraction of conduct.



### Supporting structure

- The support is designed in consideration of the tolerance of the structure, facilitating transfer with the enclosure.
- Enclosures are supported with the sliding method for expansion.



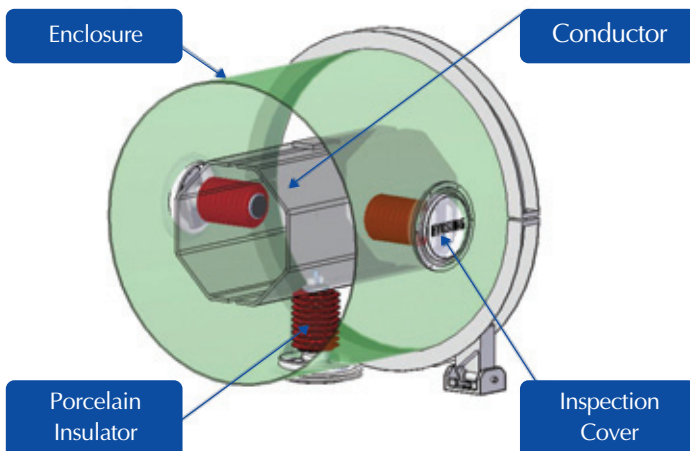
### Enclosure

Each phase is protected with weather-resistant, dust-proof, non-magnetic metallic enclosure. The enclosure is designed to limit electric field leakage to 5% or lower.

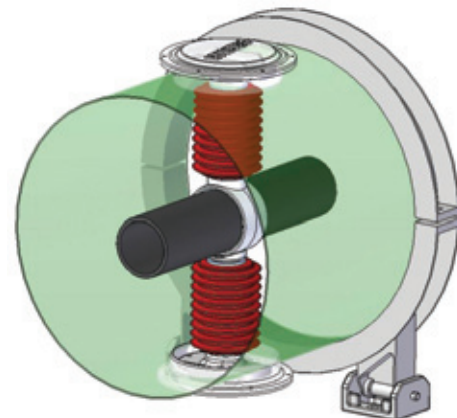
### Insulator

Insulator is made of porcelain with high strength to withstand electric or mechanical stress caused due to short-circuit.

Half-octagonal conductor (heavy load)

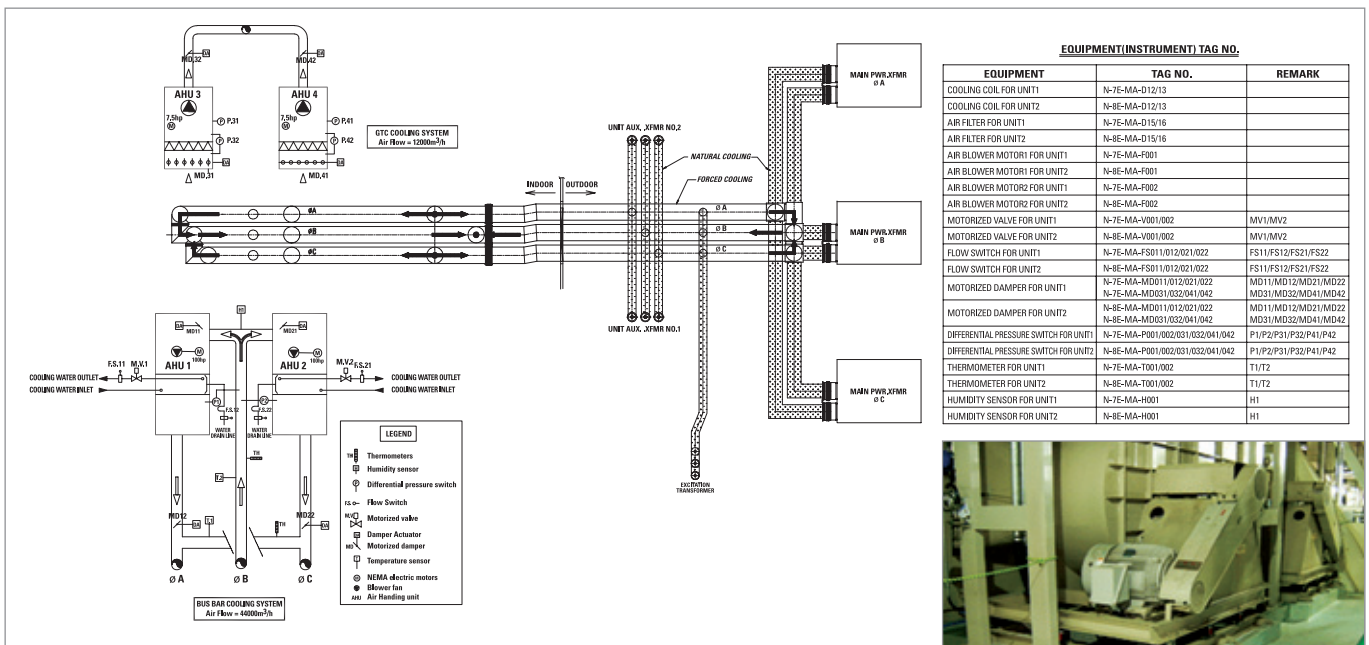


Pipe conductor (light load)



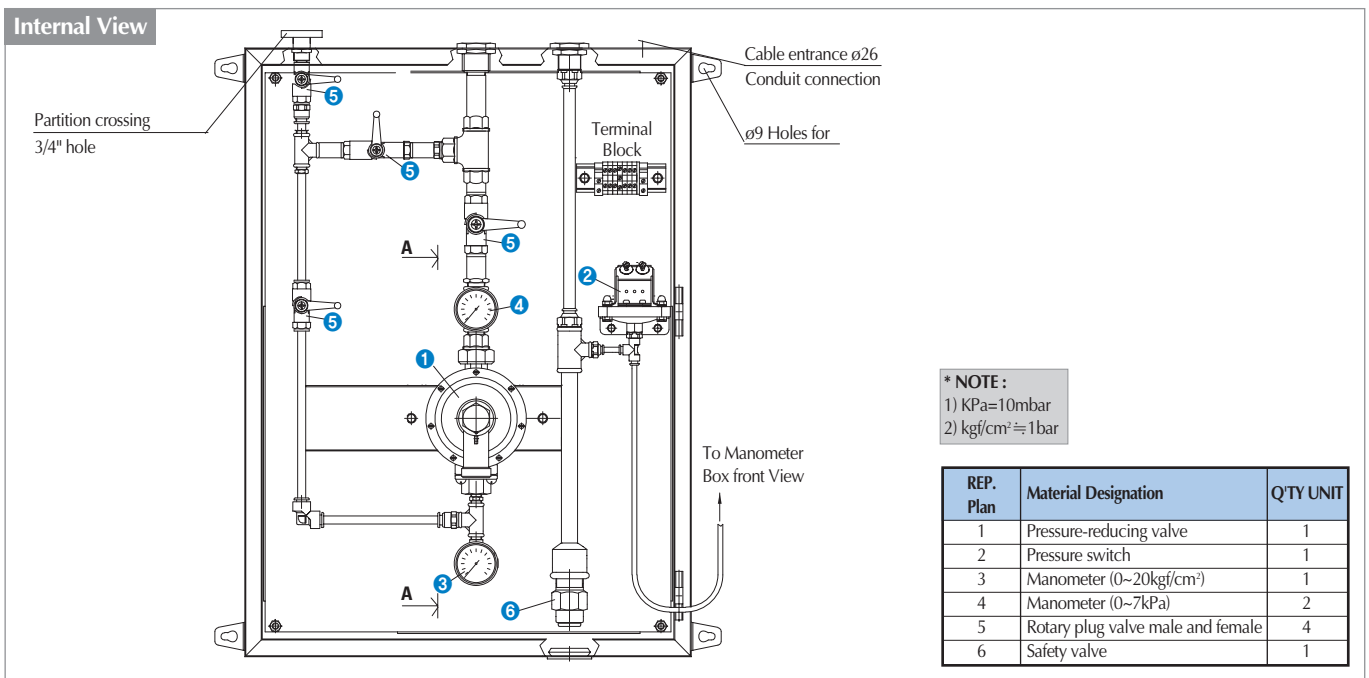
## Cooling system

- The system is designed for natural cooling for the current of 28,000A or lower.
- For forced cooling, clean and dry air from pressure device is used to circulate air in the closed circuit.



## Pressure device

Light pressure of 10~20mbar is provided inside IPB to prevent dirt from coming inside.







# IPB(Isolated Phase Bus)

## Main Features of HYOSUNG IPB

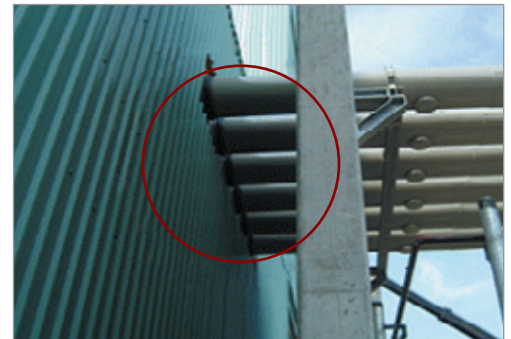
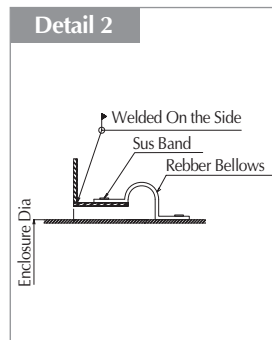
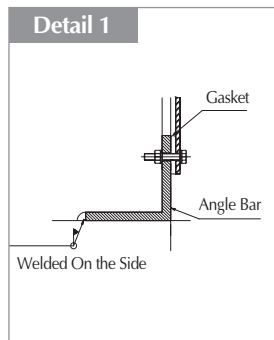
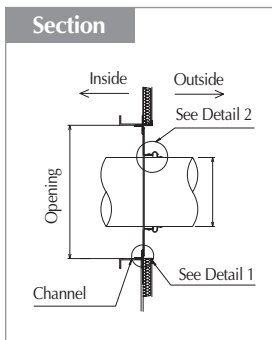
### Connector

Connection between generators and transformers is made with mesh type connectors in order that vibration should not be transferred.



### Wall penetrating part

Wall penetrating part and IPB are sealed with aluminum plate against foreign substance.



## Specifications of HYOSUNG IPB

Type	Rated Voltage	Power Frequency	Impulse Withstanding Voltage	DC	Frequency	A	B	C
	kV	kV	kV	A	Hz	mm	mm	mm
D160 Series	15.5	50	110	Max. 5,000	50 / 60	160	650	1000
	27	60	125	Max. 5,500			750	1100
	38	80	150	Max. 5,500			800	1150
D200 Series	15.5	50	110	Max. 6,500	50 / 60	200	650	1000
	27	60	125	Max. 6,900			750	1100
	38	80	150	Max. 7,000			850	1200
D250 Series	15.5	50	110	Max. 8,500	50 / 60	250	700	1050
	27	60	125	Max. 9,000			800	1150
	38	80	150	Max. 9,400			900	1250
H300 Series	15.5	50	110	Max. 10,000	50 / 60	300	750	1100
	27	60	125				850	1200
	38	80	150				950	1300
H350 Series	15.5	50	110	Max. 11,000	50 / 60	350	800	1150
	27	60	125				900	1250
	38	80	150				1000	1350
H400 Series	15.5	50	110	Max. 12,000	50 / 60	400	850	1200
	27	60	125				950	1300
	38	80	150				1050	1400
H450 Series	15.5	50	110	Max. 13,000	50 / 60	450	900	1250
	27	60	125				1000	1350
	38	80	150				1100	1450
H500 Series	15.5	50	110	Max. 15,000	50 / 60	500	950	1300
	27	60	125				1050	1400
	38	80	150				1150	1500
H550 Series	15.5	50	110	Max. 16,000	50 / 60	550	1000	1350
	27	60	125				1100	1450
	38	80	150				1200	1550
H600 Series	15.5	50	110	Max. 18,000	50 / 60	600	1050	1400
	27	60	125				1150	1500
	38	80	150				1250	1600
H650 Series	15.5	50	110	Max. 20,000	50 / 60	650	1100	1450
	27	60	125				1200	1550
	38	80	150				1350	1700
H700 Series	15.5	50	110	Max. 21,000	50 / 60	700	1150	1500
	27	60	125				1250	1600
	38	80	150				1400	1750
H750 Series	15.5	50	110	Max. 22,000	50 / 60	750	1200	1550
	27	60	125				1350	1700
	38	80	150				1450	1800
H800 Series	15.5	50	110	Max. 24,000	50 / 60	800	1250	1600
	27	60	125				1400	1750
	38	80	150				1500	1850
H850 Series	15.5	50	110	Max. 25,000	50 / 60	850	1350	1700
	27	60	125				1450	1800
	38	80	150				1550	1900
H900 Series	15.5	50	110	Max. 27,000	50 / 60	900	1400	1750
	27	60	125				1500	1850
	38	80	150				1600	1950

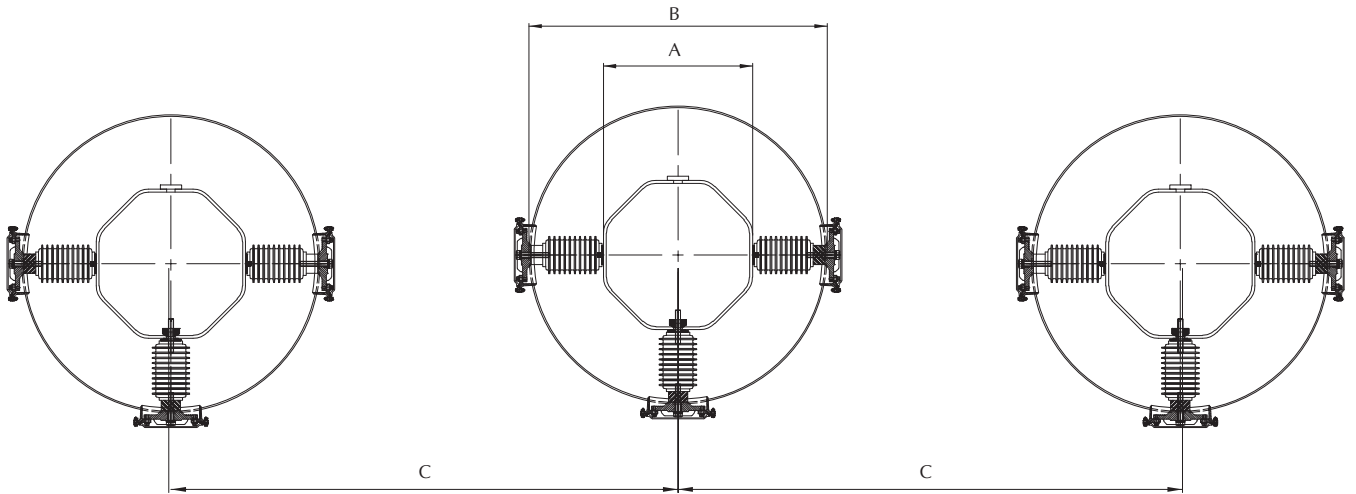
\*Note: (Name) 1. D160: (D: Pipe conductor, 160: Diameter of conductor) 2. H300: (H: Half octagonal conductor, 300: Height of conductor)



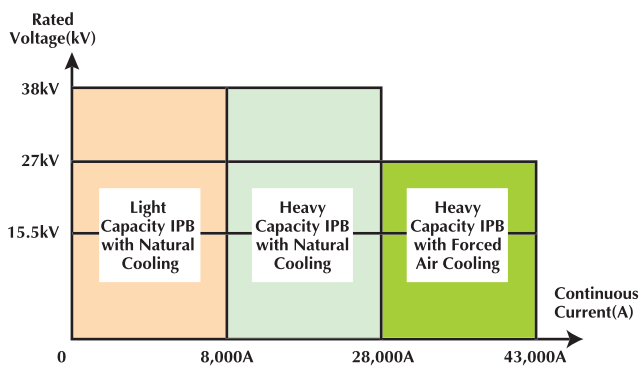
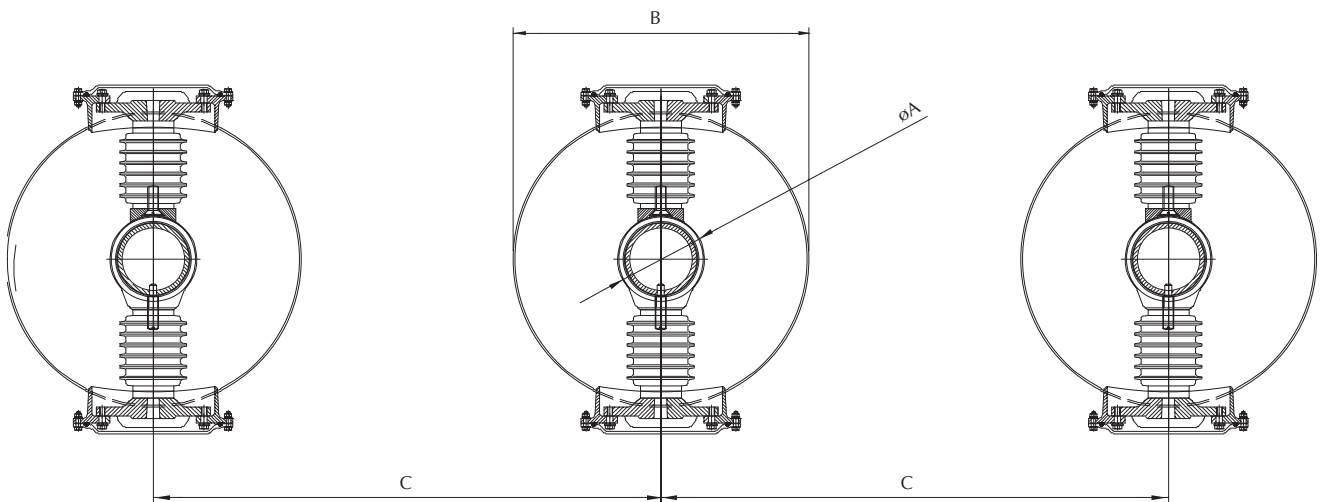
# IPB(Isolated Phase Bus)

## Specifications of HYOSUNG IPB

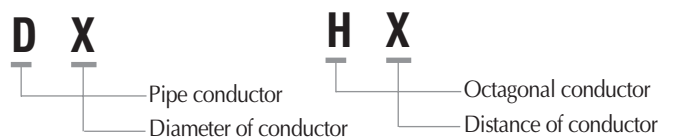
### Half octagonal conductor (heavy load: Type H)



### Pipe conductor (light load: Type D)



### Naming rule



## Control Panel of HYOSUNG

### ProGIS(C-GIS)



Advanced MV GIS with maximum reliability and stability, and minimum installation surface has been developed based on abundant experiences and technical capabilities acquired through contracts with many domestic / overseas clients.

### ProSWGR



ProSWGR is a metal-clad type standard high-voltage switchgear with inner spaces completely separated by partitions. The switchgear supports system operations, such as circuit breaking and monitoring, from the front panel while the door is closed.

### Metal Clad Switchgear



Metal Clad Switchgear is self-designed and developed by HYOSUNG and have the high reliability & performance.

### Low Voltage Metal Enclosed Switchgear



Low Voltage Switchgear will provide safe power distribution with handy operation, easy to installation & maintenance.

### Motor Control Center



Motor Control Center is designed with operator's safety and easy to handling. It will provide the motor's status supervision.

### Supervisory & Control Panel



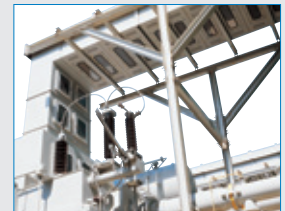
Supervisory & Control Panel will provide the easy to operation protection and control of power system by humane facto application.

### IPB (Isolated Phase Bus)



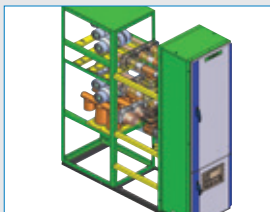
IPB is designed for high current, critical equipment or large capacity power plants. IPB is applied to the bus with the rated voltage of 36kV or lower and the rated current of 5,000~50,000A.

### NSPB(Non Segregated Phase Bus)



Metal Enclosed Bus is a good method for main bus application in power plants, substations, buildings and factories.

### 25.8kV SIS



25.8kV SIS is an environment-friendly product using epoxy solid insulation technology instead of SF<sub>6</sub> gas. The model adopts dual buses for uninterrupted expansion and maintenance. The isolated phase bus technology prevents short-circuit and the surface grounding provides high stability of the system.

### Spot Network System



Spot Network System will eliminate the care about a power interruption and will provide the optimized installation area.