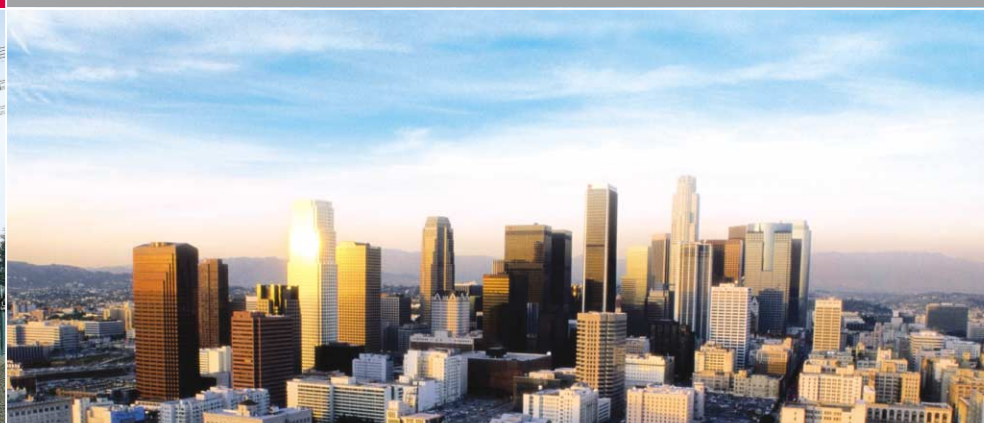
Leading Innovation, Creating Tomorrow

GSM-V07

MEDIUM VOLTAGE SWITCHGEAR

3.6/7.2kV Switchgear

Power Transmission & Distribution



LS Industrial Systems

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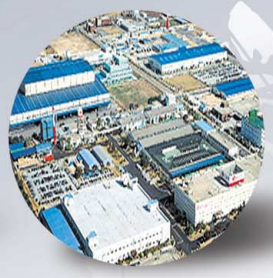
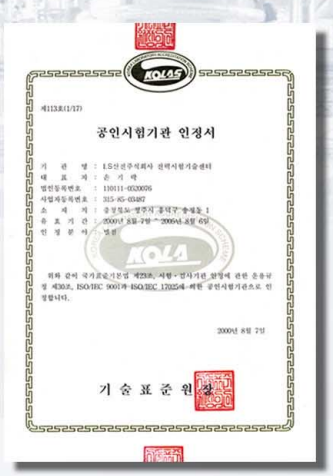
LS Industrial Systems Co., Ltd., who has been a leader in electricity and automation in the fields of industry, as a consequence of developing state-of-the-art technology, presents customer desiring new technology which will change our future life through our professional & dedicated efforts.





KAB (KAB-EMS-0010) KSA EMS KAB KOLAS CESI

ISO14001, ISO 9001

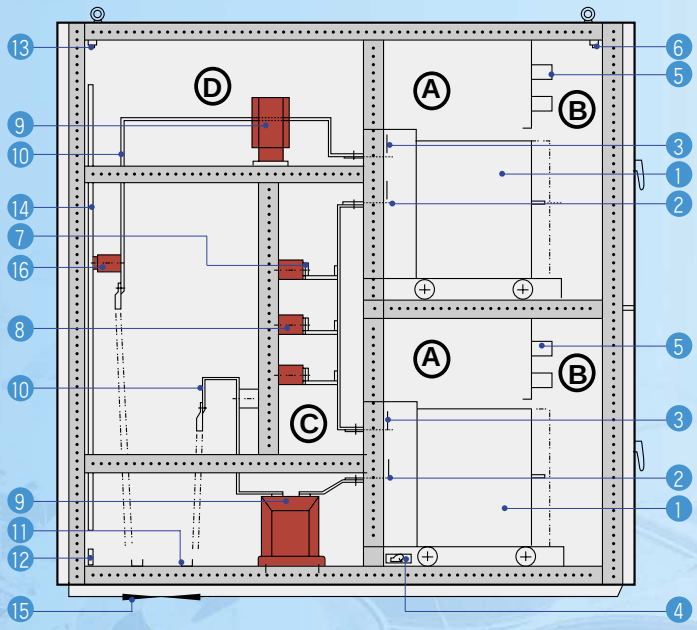
C O N T E N T S

To supply stable power in the various industrial fields, LS Industrial Systems is continuously trying to provide more convenient and safe electrical equipment.

Focused on easy and safety operation & maintenance, LS GSM provides competent performance by adopting highly reliable VCB and digital devices.

Features & Internal Structure of GSM-V07

- GSM-V07 is composed of circuit breaker, LV, bus bar and cable compartment. bus bar and cable compartment can be separated optionally if customer requires.
- Interchangeability is possible between same rating devices in the compartment.
- While the CB is drawn out from service position, CB & bus bar compartment can be separated by adopting shutter. (Option)
- Modular & simple structure enables easy extension in future.
- Metallic earthed enclosure and compartment enables operator's safety during operation & maintenance.



A CB Compartment
1. Vacuum circuit breaker
2. Contact bushing
3. Shutter
4. Space heater

B LV Compartment
5. Low voltage devices
6. Fluorescent lamp

C Bus bar Compartment
7. Main bus bar
8. Supporting insulator

D Cable Compartment
9. Current transformer
10. Vertical bus bar
11. Cable bracket
12. Earthing metal
13. Fluorescent lamp
14. Cover for safety
15. Cable entrance
16. Supporting insulator



With customer s satisfaction through quality and service, LS Industrial Systems provides No.1 products in the world.

High Performance

Module Engineering

- GSM-V07 using a high interrupting performance VCB is vertical and self-standing medium voltage metal-clad switchgear designed and manufactured to satisfy the functionality and safety.
- Compact size design and standardization of manufactures based on functionality and safety with practical equipment arrangement contribute fast construction by short delivery and easy installation.
- Designed and manufactured by IEC standard to be applied widely.
- Equipped LS LVB Type VCB and designed and manufactured to accept any C.B.
- Applicable to single bus system and double bus system.

Easy

Easy Inspection and Repair

- Control and check circuit equipped in forward LV compartment gives easy inspection and enough place to contact external cable.
- Enough place for inspection and change of internal devices.

Control

Application of Digital Equipment

- Available use for electrical switchgear adopted GIPAM and GIMAC and digital data link to SCADA system.

Safety

Safety

- Designed and manufactured by IEC standard.
- Each unit is manufactured with compartments separated by grounded metal for easy run and inspection.
- Designed and manufactured with LS Industrial Systems own frame and hinge structure.
- Interlocking system is equipped to prevent mal-operation.

Intelligent

Constant Increase of Reliability

- LS Industrial Systems makes efforts to increase product reliability through Power Testing & Technology Institute, nationally recognized test institute.

Technical Data

Description		Data
Model name		GSM-V07
Rated voltage	(kV)	3.6 / 7.2
Rated ampere	(A)	630, 1250, 2000, 3150
Rated frequency	(Hz)	60 (50)
Rated short time current (1sec or 3sec)	(kA)	8, 12.5, 20, 25, 31.5, 40
Rated peak withstand current		2.6 times of rated short time current
Rated power frequency withstand voltage	(kV/1min)	16 / 22
Rated lightning impulse withstand voltage	(kV/1.2×50us)	45 / 60
Applied standard		IEC 60298

Features & Advantages of Each Compartment

C.B. Compartment

C.B. Position

- Movable to each independent position.
- Run position : main circuit and operation circuit are connected to circuit.
- Test position : main circuit is disconnected to bus bar whilst operation circuit is connected to circuit.
- Disconnected (Draw - out position) : connector of operation circuit in test position is disconnected by manual and main circuit and operation circuit are disconnected from circuit.

Safety Interlock

- C.B. is equipped with the following interlocks against mal-operation.
- C.B. cannot be drawn in and out when run position.
- C.B. cannot ON when moving between run and test position.

Mechanism

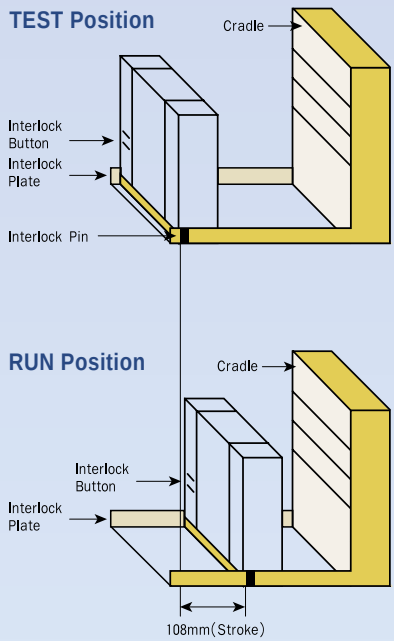
- Electrically and mechanically trip free.
- Equipped anti - pumping device.

Safe Design

- C.B. is automatically connected to ground bus through ground device which is safely grounded when C.B. is moving to run-test position.
- When C.B. is drawn-in and out, recharge compartment is automatically tripped by automatic shutter(Option).

Convenience

- Additional block equipped on the incoming hole of external control circuit prevent invasion of rats or insects.
- Space heater equipped in C.B. compartment removes moisture.(Option)



Automatic Shutter



LV Compartment

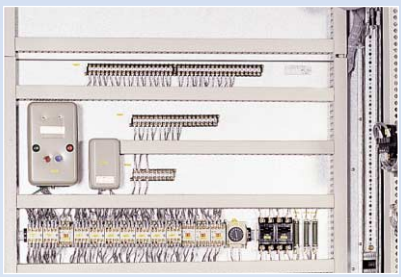
Digital Equipment

- Acceptance of multi-functional digital power monitoring device (GIPAM, GIMAC) to be available for electrical switchgear.
- Available of connection between SCADA system and digital data.
- Simple arrangement of door devices by installation of GIPAM instead of meter and protection relay.

GIPAM 2000

Easy Connection

- Easy operation & control connection.
- Good appearance with duct wiring.
- Circuit connection through terminal block gives easy inspection and extension.
- Wiring with hook band to door protects circuit.
- Epoxy band in wiring holes passing close switchgear protects circuit.
- Easy maintenance by forward arrangement.
- Enough space for easy wiring test and change.



LV Compartment
Operation and Control Circuit

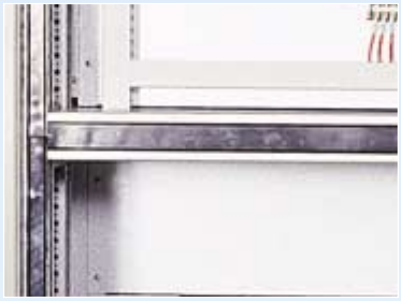
Equipment Arrangement

- Operation equipment is separated from charged compartment for safe inspection during operation.

Hinge

Firmness of Product

- Piano hinge, LS Industrial Systems own technology, prevents a door from moving.
- Hinge is firm and durable by covering with silver nitrate.
- Switchgear is firm with roll forming frame construction, LS Industrial Systems' patent.
- Complex construction of roll forming frame and corner bracket suitable for installing heavy equipment prevents deformation.
- Each equipment of roll forming frame construction can be easily installed without additional manufacture.



Packing

Characteristics & Advantages of Each Compartment

Bus bar Compartment

Characteristic

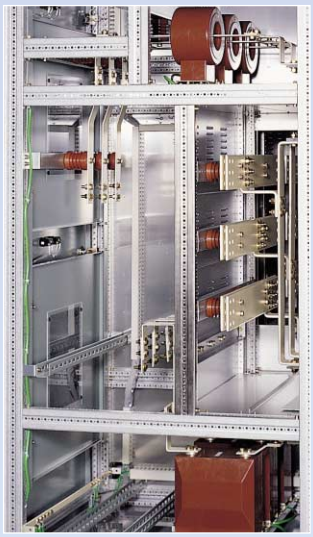
- Bus bar is designed and manufactured to withstand rated short-time current regulated by IEC standard.
- Bus bar is made of good conductive copper.
- Designed for easy repair and test.
- Main bus bar is supported by epoxy insulator or side bushing.
- Main bus bar is plated with silver for good contact.

Option

- The edge of main bus is friendly designed for future extension.
- Bus bar applied with insulated tube and boots is safe during repair.

Easy Install & Moving

- Eye bolt installed at the top of switchgear is convenient for moving and install.
- Eye bolt is designed and manufactured to be endurable against the weight of switchgear.



Cable Compartment

Cable Compartment

Characteristic

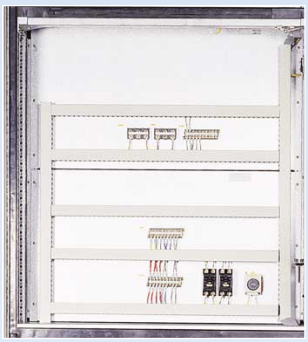
- Cable supporter or cable bracket(Option) is installed for supporting cable in external cable construction.
- Top cover of switchgear is manufactured to protect switchgear from rain dropping from the ceiling. (Option)
- CT is applied with epoxy mold type for standard or depending on insulation level, detail and mechanical firmness.
- Inside switchgear is applied with galvanized sheet steel to endure erosion.
- Ground bus is installed at the bottom part for easy ground construction.

Safety Design

- Blocking board set on external main bus bar incoming hole is good for finish construction and prevent invasion of rats or insects.
- Ground flexible bus set between doors and frame prevent electric accidents.
- Protection cover is set on backside of back door for safety.
- Padlock is equipped on door handle to prevent unintentional access.
- Warning sticker on protection cover warns electric accidents.

Option

- Cable supporter or cable bracket(Option) is installed for supporting cable in external cable construction.
- Top cover of switchgear is manufactured to protect switchgear from rain dropping from the ceiling. (Option)



Internal Auxiliary Device

Main Equipment



Vacuum Circuit Breaker(VCB)

LS VCB is user-friendly to give more convenience and safety by providing high speed interrupting and having wide range of accessories.

Technical Data

Description		Data
Model name		LVB-6A-8A/13A/20A/25A/32A/40A
Rated voltage	(kV)	3.6 / 7.2
Rated ampere	(A)	400, 630, 1250, 2000, 3150
Rated frequency	(Hz)	50 / 60
Rated breaking current	(kA)	8, 12.5, 20, 25, 31.5, 40
Rated short time current	(kA)	8, 12.5, 20, 25, 31.5, 40
Rated power frequency withstand voltage	(kV/1min)	22(20)
Rated lightning impulse withstand voltage	(kV/1.25*50㎲)	60
Operation duty		CO-15s-CO, O-3min-CO-3min-CO
Applied standard		IEC 60056

Vacuum Circuit Breaker

Vacuum Contact Switch (VCS)

VCS is highly reliable and simple to use as well as compact size by adopting compact vacuum interrupter.

Technical Data

Description		Data
Model name		LVC-3/6Z~GB - 42 / 44D
Rated voltage	(kV)	3.6 / 7.2
Rated ampere	(A)	200 / 400
Rated frequency	(Hz)	50 / 60
Rated breaking current	(kA)	4
Rated short time current	(kA/1sec)	6.3
Rated power frequency withstand voltage	(kV/1min)	20
Rated lightning impulse withstand voltage	(kV/1.25*50㎲)	60
Motor	(kW)	3000
Transformer	(kVA)	4000
Condenser	(kVA)	2000

Vacuum Contact Switch

Potential Transformer(PT)

To measure the voltage, PT transforms high voltage to low voltage where the voltage is more than 600V.

Potential Transformer

Main Equipment

Multi Function Digital Protective Relay

LS Industrial Systems protection and measurement products specialize in the protection and monitoring of electricity distribution networks, making your power distribution easier and more reliable.
You can either integrate these products into your intelligent switchgear or use them as stand-alone multifunction units.
In addition, all of these products provide versatile communications as well as sophisticated functionality for event, alarm and fault analysis.

Function

Description			Factor
Protection	GIPAM - 2000	Feeder Incoming	OCR, OCGR, SGR, DGR, OVR, OVGR, UVR, R-UVR, NSOVR(47N), POR(47P),Re-closing
		Motor	OCR, OCGR, SGR, DGR, NSOCR, POR, NSOVR, THR, UVR, 48/51LR
		Transformer	DFR, OCR, OCGR, Inrush Detector, Lock-out
	GIPAM		OCR, OCGR, OVR, UVR, OVGR, SGR
Measurement	GIPAM2000		• Voltage, Zero phase voltage, Reverse phase voltage, Ampere, Zero phase ampere, Reverse phase current • Phase, W, Var, VA,WHM, Varh • Frequency, Power factor, Harmonics • Demand of W & Var, A Demand
	GIPAM		• Voltage, Zero phase voltage, Ampere,W, Var, VA,WHM, Varh frequency, Power factor
Communi - cation	GIPAM2000		• Protocol : I-Net, DNP3.0, MODBUS, TCP/IP • Communication Std. : I-Net, RS-485/DNP3.0, Fiber optic/DNP3.0 • Aux. Equip. : Protocol converter, Web-linker & Web server(s/w)
	GIPAM		• Custom LSI ASIC chip applied high speed & reliable serial communication • 230kbps, 4-wire multi-drop

GIPAM 2000

GIPAM

Current Transformer

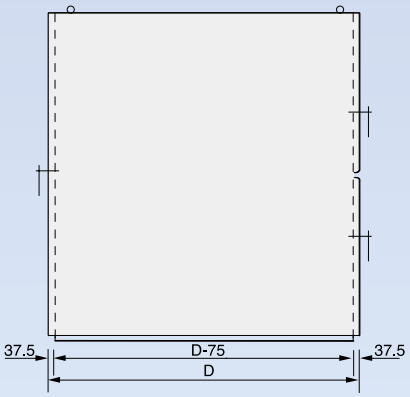
To measure big ampere, CT transforms big ampere to small ampere in proportion to big ampere. CT's secondary ampere is 5A as standard.

CT

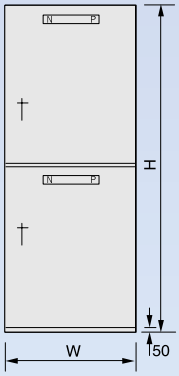
Dimension(Standard)

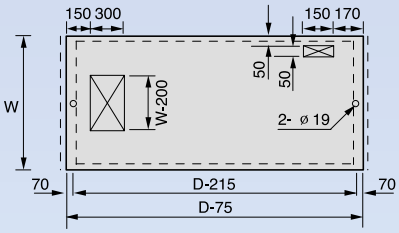


Side View



Front View



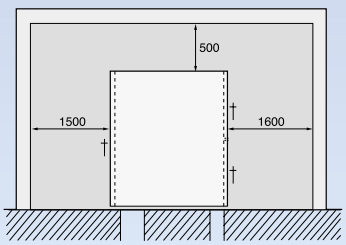


Dimension(Standard)

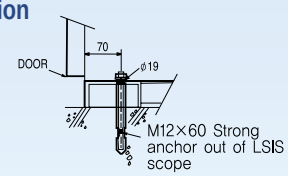
Model Name	Rated Voltage (kV)	VCB Rated short circuit breaking current (kA)	VCB Rated Ampere (A)	Outline dimension (mm)		
				W Note.[Note 1)]	D	H[Note 2)]
GSM-V07	3.6 / 7.2	8	400	800	2,200	2,350
		12.5	630	800	2,200	
		20	630	800	2,200	
			1,250	800	2,200	
		25	630	800	2,200	
			1,250	800	2,200	
		31.5	1,250	800	2,200	
			2,000	800	2,200	
			3,150	900	2,500	
		40	1,250	800	2,500	
			2,000	800	2,500	
			3,150	900	2,500	

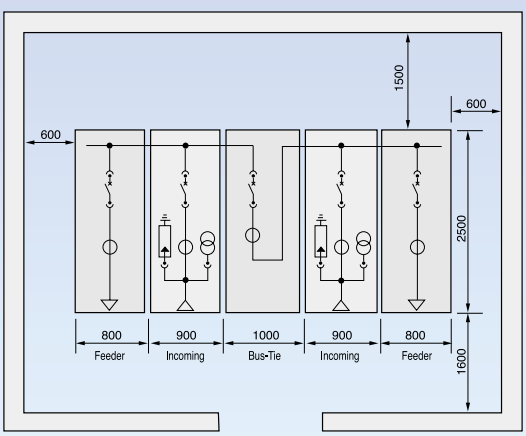
Note. 1) Additional 100mm width shall be added for bus tie panel. 2) 50mm base channel is included in height (2,350mm).

Minimum Installation Space



Sectional view of panel base for installation





Leading Innovation, Creating Tomorrow

Safety Instructions

- For your safety, please read user's manual thoroughly before operating.
- Contact the nearest authorized service facility for examination, repair, or adjustment.
- Please contact qualified service technician when you need maintenance.
  Do not disassemble or repair by yourself!
- Any maintenance and inspection shall be performed by the personnel having expertise concerned.

LS Industrial Systems Co., Ltd.

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HEAD OFFICE

LS Tower 1026-6, Hogye-dong, Dongan-gu, Anyang-si,
Gyeonggi-do 431-848, Korea
Tel. 82-2-2034-4943~5
Email : jmseo@lsis.biz
seungjunl@lsis.biz
ymjeong@lsis.biz
hcjeong@lsis.biz
http://www.lsis.biz

Specifications in this catalog are subject to change without notice due to continuous product development and improvement.

Global Network

- **LS Industrial Systems (Middle East) FZE >> Dubai, U.A.E.**
  Address: P.O.Box-114216, API World Tower, 303B, Sheikhe Zayed Road, Dubai, U.A.E.
  Tel: 971-4-332-8289 Fax: 971-4-332-9444 e-mail: hwyim@lsis.biz
- **Dalian LS Industrial Systems Co., Ltd. >> Dalian, China**
  Address: No.15, Liaohexi 3-Road, Economic and Technical Development zone, Dalian 116600, China
  Tel: 86-411-8273-7777 Fax: 86-411-8730-7560 e-mail: lixk@lsis.com.cn
- **LS Industrial Systems (Wuxi) Co., Ltd >> Wuxi, China**
  Address: 102-A, National High & New Tech Industrial Development Area, Wuxi, Jiangsu, 214028, P.R. China
  Tel: 86-510-8534-6666 Fax: 86-510-522-4078 e-mail: xuhg@lsis.com.cn
- **LS-VINA Industrial Systems Co., Ltd >> Hanoi, Vietnam**
  Address: Nguyen Khe - Dong Anh - HaNoi - VietNam
  Tel: 84-4-882-0222 Fax: 84-4-882-0220 e-mail: srjo@hn.vnn.vn
- **LS Industrial Systems Tokyo Office >> Tokyo, Japan**
  Address: 16FL, Higashi-Kan, Akasaka Twin Tower 17-22, 2-chome, Akasaka, Minato-ku Tokyo 107-8470, Japan
  Tel: 81-3-3582-9128 Fax: 81-3-3582-2667 e-mail: jschuna@lsis.biz
- **LS Industrial Systems Shanghai Office >> Shanghai, China**
  Address: Room E-G, 12FL Huamin Empire Plaza, No.726, West Yan'an Road Shanghai 200050, P.R. China
  Tel: 86-21-5237-9977(609) Fax: 89-21-5237-7191 e-mail: jinhk@lsis.com.cn
- **LS Industrial Systems Beijing Office >> Beijing, China**
  Address: B-Tower 17FL. Beijing Global Trade Center B/D. No.36, BeiSanHuanDong-Lu, DongCheng-District, Beijing 100013, P.R. China
  Tel: 86-10-5825-6025, 7 Fax: 86-10-5825-6026 e-mail: cuixiaorong@lsis.com.cn
- **LS Industrial Systems Guangzhou Office >> Guangzhou, China**
  Address: Room 1403,14FL, New Poly Tower, 2 Zhongshan Liu Road, Guangzhou, P.R. China
  Tel: 86-20-8326-6764 Fax: 86-20-8326-6287 e-mail: linsz@lsis.biz
- **LS Industrial Systems Chengdu Office >> Chengdu, China**
  Address: 12FL, Guodong Buiding, No.52 Jindun Road Chengdu, 610041, P.R. China
  Tel: 86-28-8612-9151 Fax: 86-28-8612-9236 e-mail: yangcf@lsis.com.cn
- **LS Industrial Systems Qingdao Office >> Qingdao, China**
  Address: 7B40, Haixin Guangchang Shenye Building B, No.9, Shandong Road Qingdao 26600, P.R. China
  Tel: 86-532-8501-6568 Fax: 86-532-583-3793 e-mail: lirj@lsis.com.cn

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