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LSIS is a leader of the electric power and automation industry. Through ongoing innovation, LSIS strives for top quality and groundbreaking products, so that it can become the global leader the world of tomorrow requires.

become a global leader with proper solutions and automation solutions.

LSIS is now taking off to know-how in the field of power

Where there is light, energy, and electric power, you will find LSIS. LSIS is with you in your everyday life.



Solutions

Low Voltage Equipment Medium Voltage Equipment Protection & Measurement Metering Transformer Gas Insulated Switchgears Low & Medium Voltage Switchgears Bus Duct Systems Power Equipment Diagnosis · Preventive Maintenance HVDC











• Futuring Smart Energy **Power Grid Solutions**

Low Voltage Equipment Medium Voltage Equipment Protection & Measurement

LSIS is taking off toward a global leader beyond the first company in the field of power solution in Korea.

Using technology that it has accumulated over more than 30 years in the electric power industry, LSIS develops, produces, and supplies a whole range of products related to power plants, power transmission and distribution, equipment for electricity users, and electric power IT to overseas markets as well as within Korea

LSIS electric equipment is developed under the quality-first principle. Year on year, its sales in the global market have increased by 30 to 40 percent. LSIS develops and produces various products in the field of power solutions. Most notable among these is its Susol series, a premium brand that was developed through the company's "World's No. 1 Product Project," which further increased the company's reputation internationally. The company's basic technology in fields like arc discharge protection, application of environment-friendly materials, and technology for multi-functional digital watt-hour meters and relays are already at the highest international standards. The company's leading technology was further recognized when it released circuit breakers with the world's highest level of breaking performance. First company in the world to develop hybrid superconducting fault current limiter, LSIS has expanded to develop Ultra high voltage business. With the world's highest levels of technology and product quality in electric power solutions, LSIS is always actively exploring the global market in the field of ultra-high voltage electric equipment as well.



Supply 2014~2012 History

- Irag substation: GIS, transformer, and Switchgear Brvan Texas Utilities: Transformer (US)
- Sudanese electric power authority substation: Electric power facility 145kV GIS (Sudan)
- HVS Mobile: 145kV GIS (Russia)
- CJ Engineering & Construction: Transformer (Malavsia)
- MOE: Power facility ultra-high voltage GIS (Iraq) • PEDEEE: Power facility Ultra-high voltage GIS/ transformer (Svria)
- Kangwon Land: Distribution board
- Yeongheung thermal power plant: Distribution board
- Sin Ulsan and Younggwang Substation, KEPCO: 362kV 50kA GIS
- Incheon base, Korea Gas Corporation: 170kV GIS
- Korea Rail Network Authority: 170kV GIS
- Daewoo E&C central railway car depot: 72.5kV GIS
- Woongjin polysilicon plant: 170kV GIS, 154kV
- transformer

- 2011~2010 Sane Shargh: Distribution board (Iran) National Electricity Corporation (NEC): Distribution
- board (Sudan)
- STX: Transformer (Irag)
- South Pars PJT: 145kV GIS (Iran)
- Uijeongbu subway: Distribution board
- Lotte Hotel: Distribution board
- Railroad in Korea Rail Network Authority: 72.5kV GIS
 LG Innotek: Distribution board
- GS E&C / LG display power facility: 170kV GIS
- Power facilities in LG Innotek / LG Chem: 170kV GIS
- Ochang plant, LG Chem: Distribution board IFC in Youido: Distribution board
- Bundang branch of Seoul Nat'l Univ. Hospital: Distribution board
- Sintanjin plant, KT&G: Distribution board

2009~2008

- Mobile substation: 126kV GIS (Russia) • SEMENS ARL Bangkok PJT: 72.5kV GIS
- POSCO E&C Vietnam PJT: 145kV GIS (Vietnam)
- Russian substation power facility: 145kV GIS (Russia)
 CEBU TPP PJT: Distribution board (Philippines)
 - Water treatment facility: Distribution board (Libya) Oil refining facility: Distribution board (Irag)
 - Paju combined heat & power plant: Distribution board Ulsan thermoelectric power plant: Distribution board

 - Gumi plant, LG Display LCD: Distribution board Asan factory, Samsung Corning Precision Glass: 170kV GIS Goyang international exhibition, Daewoo E&C: Ultra-high voltage GIS/TR
 - Gumi plant, LS Cable: 362kV 50kA GIS
 - Daesung Industrial Gases: Ultra-high voltage GIS/TR

2007~2006

- Nigerian power facility: Distribution board, electric power equipment (Nigeria)
- Soju/Tangjung plant, Samsung Electronics: Breaker (China)
- South Oil Refinery MCC SCADA (Iraq)
- Posco FINEX: High/low voltage distribution board. electric power equipment
- GS Caltex: Ultra-high voltage GIS, distribution board, electric power equipment
- Sinnamwon substation, KEPCO: 362kV 50kA GIS SK: Distribution board, electric power equipment
- Incheon International Airport IAT: Distribution board, electric power equipment
- POSCO Specialty Steel: Electric power control system Aerospace projectile facility: Relay
- substation and electric power SCADA system

Metering Transformer



- - Gumi plant, LG Micron: 170kV GIS
 - Gumi power plant, STX Energy: 170kV GIS
 - Cheongju factory, Hynix Semiconductor: 170kV GIS

Incheon International Airport: Phrase 2 power

- eauipment
- Asan plant, Samsung ENG: 170kV 50kA GIS • Hanwha E&C/Daegu Combined Heat & Power plant: 170kV GIS
- Pohang factory, POSCO E&C: 170kV GIS

Gas Insulated Switchgears Low & Medium Voltage Switchgears Bus Duct Systems Power Equipment Diagnosis · Preventive Maintenance HVDC

LSIS is proving its competitive edge through various products developed and produced based on technology of electric power supply in both domestic market and overseas market.

2005~2003

- RASLAFFAN industrial complex: Distribution board (Qatar)
- Oman plant: Distribution board (Oman) Oingdao plant, POSCO: 126kV GIS
- Sichuan factory, Huvis: 126kV GIS
- LG Chem: Ultra-high voltage GIS.
- distribution board, electric power

2002~2000

- Nanjing LCD plant, LG Display: 126kV GIS
- Incheon Airport: 170kV 50kA GIS
- KEPCO: 170kV 31.5/50kA GIS
- Pyeongtak substation in Gyeongbu Line. Korean National Railroad: 170kV GIS 31.5kA
- Gumi plant LG Display: Distribution board
- World Cup Stadium (Jeonju, Seogwipo): Distribution board
- Pohang plant, POSCO: Distribution board
- Dangjin thermoelectric power plant: Distribution board

Low Voltage Equipment Medium Voltage Equipment Protection & Measurement Metering Transformer

Low-Voltage



Metasol Molded Case Circuit Breakers

- · Rated current : 3 ~ 1200A with 6 Frame size · Rated breaking capacity : Up to 85kA at 415Vac
- Uimp = 8kV, Ui = 750V, lcs = 75~100% lcu
- · Same external dimensions with MCCB&ELCB
- · KEMA, CE certified



Susol Molded Case Circuit Breakers

- Rated current : 16 ~ 1600A with 5 Frame size Rated breaking capacity : Up to 150kA at 415Vac
- Uimp = 8kV, Ui = 750V, Ics = 100% Icu · Various trip unit & accessories
- Protective coordination - Discrimination, Cascade, Type 2 Coordination Engineering software : LS Power solution
- KEMA, CE & UL certified



Susol UL Molded Case Circuit Breakers

- Rated current : 100~1200AF 2, 3pole(UTE & UTS Series) - AF : 100, 150, 250, 400, 600, 800, 1200AF - Ampere Range : 15 ~ 1200A High breaking capacity : 35kA, 65kA, 100kA @ Rms at
- 480VAC
- Various Trip Unit : ATU, FMU, FTU, MCS Variable Accessories
- Electrical auxiliaries [AX, AL, UVT, SHT]
- Extended handle, Flange handle, Locking devices
- LUG for Cu/Al cable with UL486
- Standards : UL 489, UL508, NOM ANCE



Metasol 2100AF Contactors

- · Optimized to control AC-1 category loads
- · Rated current : 1400, 1700, 2100A with 3 Frame size Uimp=8kV Ui=1 040V
- · Coil voltage
- 100~240VAC. 50/60Hz
- 100~220VDC
- One-Mold Type
- · CE, UL/cUL, CCC



Electronic Motor Protection Relays

- · Reduction of panel space · EMC tested according to EN · Adjustable trip time (trip class 5_10_15_20_30) Inverse time or definite time characteristics are
- available
- Various functions for protection against
- Overload, phase failure, unbalance, reverse phase
- Wide adjustable range
- · CE, UL certificate

Medium-Voltage



Miniature Circuit Breakers/Residual Current Device

- Protection
- BK series : Short circuit & Overload
- RK series : Ground fault, Ground fault & Overcurrent Rated current : 1~125A
- · Characteristic : B, C, D
- · 1P, 1P+N, 2P, 3P, 3P+N, 4 Poles
- · Rated breaking capacity : 3~10kA at 230/400V
- · IEC 60898, IEC 60947-2, UL1077, IEC 61008, IEC 61009



Metasol Contactor & Overload Relays

- Sealing structure without arc leakage
- Cost saving through longer life
- Longer life and higher current capacity required
- Control power wiring flexibility
- Operation with minimizing arc when switching
- Continuity of service after removal of short-circuit



Manual Motor Starters

- Rated current : 0.1 ~ 100A with 3 Frame size
- · Up to 45kW at 400V in category AC-3
- Uimp = 6kV, Ui = 690V



Susol Air Circuit Breakers

- Rated current : 200 ~ 6,300A with 3 Frame size Rated breaking capacity : Up to 150kA at 500Vac
- · Rated short-time withstand current : Up to 100kA / 3sec
- Uimp = 12kV, Ui = 1,000V, Ics = 100% Icu
- · Multi-functional digital trip relays (N/A/P/S type OCR)
- Various accessories (53 types)
- · Compact size & high breaking capacity
- · Complete full line-up
- · 100% N-Phase conducting capacity
- · KEMA, KERI, CE certified



Susol Vacuum Circuit Breakers

- Rated voltage : 7.2kV, 12kV, 17.5kV, 24kV, 36kV, 40.5kV
- Rated current : Up to 4,000A
- Rated short-circuit breaking current : Up to 50kA
- CB Compartment available (Box type cradle)
- · Various accessories(18 types)
- · Compact size & high breaking capacity
- · Complete full line-up
- · IEC 62271-100
- · KEMA, CESI, KERI certified

- Combination with Susol/Metasol MC
- Various accessories
- KEMA, ULCSA, CE certified

Gas Insulated Switchgears Low & Medium Voltage Switchgears Bus Duct Systems Power Equipment Diagnosis · Preventive Maintenance HVDC

- · Manual reset as standard (automatic reset optional)



Metasol Air Circuit Breakers

- High breaking current 120kA, 6300A at AC500V
- · Up to 6300A, 4 frame · Compact & simplified size
- Approved the type test by KEMA according to IEC60947-2
- High function Trip Relay - Protection : L, S, I, G, ZSI, Thermal, UVR, OVR, etc - Multi-functional Power Meter
- Various accessories (total 46FA)
- ON/OFF button lock / Key lock / Pad lock / Safety shutter lock
- Mechanical interlock / Racking interlock / Door interlock
- Miss insertion prevent device, Temperature alarm, etc.



Susol Ring Main Units

- Rated voltage : 12kV, 17.5kV, 24kV
- Impulse withstand voltage : 5kV, 95kV, 125kV
- Normal current
- Ring switches : 630A
- Tee-off circuit breaker : 630A
- 3 second short time current
- Ring switches : 21kA
- Tee-off circuit breaker 21kA
- Internal arc rating (Freestanding) : 21kA 1sec
- Compact size : W1030[H1400][D1600

Low Voltage Equipment Medium Voltage Equipment Protection & Measurement Metering Transformer



Vacuum Interrupters

- · Rated voltage : 7.2kV, 12kV, 17.5kV, 24kV, 36kV, 40 5kV
- Rated current : Up to 4.000A
- Rated short-circuit breaking current : Up to 50kA
- Reliable with High Speed Interrupting - High interrupting capacity & long life span
- Compact design & environmental friendly product



Vacuum Contactors

- Rated short-time current : 6.3kA/1sec
- · Short-circuit protection : 40kA · Applied standards : IEC60470, IEC 60282-1,
- JEM1167, KEMC1126
- · Ratings : 3.6/7.2kV 200/400A



Power Fuses

Rating: 3.6/7.2/24kV · Unification of connection size by DIN43625 for easy replacement and maintenance · Viewing verification due to the improvement of operation distance and weight of striker · Electrical signal and mechanical interlock by striker Applied standard: KSC4612, DIN43625, IEC60282-1

Protection & Measurement





- · Various protection functions
- Over current, Under current, Phase failure, Reverse phase Stall/Lock, Phase unbalance, Ground fault, Short circuit
- · The display part may be separated from the body · Display motor load rate by graph and digital
- ampere-meter
- Inverse time or definite time characteristics are available
- · Wide current setting range
- Storing up the last fault cause and motor operation hours RS-485 MODBUS communication and 4~20mA analogue
- signals are available (IMP)
- CE, UL, CCC and marine certifications



Digital Integrated Protection & Monitoring Devices (GIPAM-2000FI/M/T)

- 27, 64, 47, 46, 49, 48/51LR, 79, 87T • Metering & Measurement
- Event & Fault Recording
- Event Recording : Max. 800 events
- Fault Recording : Max. 200 faults
- SOE & SBO Functions
- Vector Diagram
- Programmable I/O : DI 10, D0 10
- TCS/TRS Functions



Load Break Switches

- · Rating : 24kV 630A
- · Rated short time current : 20kA/1s (52kA peak)
- · Performance up-grade by new standard
- · Metal screen test
- · Miniature type design
- \cdot 3 phase package operation and combination type fuse
- · Bending knife structure
- · Accessories : switching counter, sub switch (2A2B)
- · Applied standard : IEC62271-105, IEC60265-1

Auto Section Switches

- Rating : 25.8kV 200A
- · Air arc extinguishing type Rated short time current (asym/sym) : 15/10kA/1s Minimum distance between phases
- (215mm, metal to metal)
- · Overcurrent and ground fault protection, and short circuit current lock · Bending knife structure
- Accessories : switching counter, sub switch (2A2B)
- Applied standard : KEMC1126
- (Korea Electrical Manufacturers Cooperative)



Automatic Load Transfer Switches

- Rating : 25.8kV 630A · Air insulation method Rated short time current : 16kA/1s High speed transfer time : 10 cycles, 167ms or less Monitoring of the phase fault of main power Saving events (20EA max.) · Various output contacts · Small, light-weighted
- Motor spring charge method
- · Applied standard : IEC60265-1, PS151-05



Digital Protection Relays (GIPAM-10 CU/CR/VO/NZ)

- · 11 protective function for the medium-voltage motors
- · Compact type protective relay with built-in various add functions · The set contents can be downloaded/uploaded by USB cable, therefore
- maintenance and data inquiry are very convenient. Remote control & Monitoring of circuit breaker
- · Wave Record : 32 Sample 🛛 30 Cycle 🛛 4 EA
- · Certification : KEMC1120, IEC 60255

Gas Insulated Switchgears Low & Medium Voltage Switchgears Bus Duct Systems Power Equipment Diagnosis · Preventive Maintenance HVDC



Protection function - 50/51, 50/51N, 67G, 67N, 59, - V, Vo, V2, I, Io, I2, Ø, W, WH, VAR, VARH, F, PF - Fault Wave Recording : 64 cycle/phase



Digital Protection Relays (DPR-1000)

- Protection function
- 50/51, 50/51N, 67G, 67N, 47, 46, 49, 48/51LR, 37, 66, 38
- · Event Triggered Wave Recording
- SOE & SBO Functions
- · DI 3, D0 5, AI 2 point
- Communication
- DNP3.0, Modbus/RS-485



Digital Integrated Protection & Monitoring Devices (X GIPAM-F/B/M/T/DG/3wT)

- Protection function 50/51, 50/51N, 67G, 67N, 59, 27, 64, 47, 46, 49, 48/51LR, 79, 87T, 37, 66
- · Control and operate on screen by graphic user interface
- · Hardware/Software flexibility and easy setting with PC manager
- Increasing reliability/Flexibility through Duplex communication
- Performing 0.2% measurement accuracy for Current and Voltage
- · Sag, Swell, Interruption & Harmonic analysis of 63rd orders
- · Harmonics, THD, TDD, K-Factor
- · Dual Communication System, IEC61850 (TE)

Low Voltage Equipment Medium Voltage Equipment Protection & Measurement Metering Transformer



Digital Integrated Metering & Control Devices (GIMAC-V)

- · Main features : V, VO, V2, I, IO, I2, W, WH, VAR, VARH, VA, F, PF, DPF, Demand, THD, TDD, k-Factor, Analog Input
- · Korean/English selecting on touch screen menu · Sag, Swell, Interruption Analysis /Measurement, and 512 Events storable
- · Harmonic analysis spectrum 63rd analysis (THD, TDD, k-factor, Crest Factor)
- Current and voltage measurements with accuracy 0.2% Power, energy measurements with accuracy 0.5 Class (IEC 62053-21, 22)
- · 250 PQ Event waveform data can be stored
- · Wide voltage input range (AC 10 ~ 452V, 40 ~ 70Hz) · Voltage/current 0.2% and power/energy 0.5 Class
- accuracy achieved



Digital Integrated Metering & Control Devices (GIMAC-IV)

- Metering & Measurement - V, VO, V2, I, IO, I2, Ø, W, WH, VAR, VARH, VA, F, PF, DPF, Demand(W, I), THD(V, I), Analog Input
- Accuracy : ±0.2%~0.5% SOE & SBO Functions
- · 2nd~15th Harmonics
- · Vector Diagram
- · DI 10, D0 10, AI 2 point
- · Option : Automatic power factor controller, Demand controller
- Communication
- DNP3.0, Modbus/RS-485, I-NET

Digital Power Meters (GIMAC-i)

- Metering & Measurement - V, VO, V2, I, IO, I2, W, WH, VAR, VARH, VA, VAH, F PF
- Option : Ø, Reverse(Wh, Varh), Demand(W, I),
- THD(V, I), DPF
- Accuracy : ±0.3%~0.5%
- · 2nd~15th Harmonics
- Communication
- Modbus/RS-485

Transformer



Power Transformer

- · Rating : 3P ~ 550kV ~800MVA
- · Using the latest program related magnetic field, insulation, cooling and structure, product stability and electric reliability by optimum insulation and structural analysis secured
- · LSIS's Power Transformer factory is equipped with the latest core process machines, winding machines, high capacity vacuum heat drying equipment, state-of-the-art cleaning facilities and has the best testing room

Metering



Digital Electricity Meters

- · 1P2W 220V 40(10)A, 80(20)A, 120(30)A
- · UClass : 1.0
- · UForward kWh
- · UAMR system (Exclusive Line)
- · UBuilt-in MODEM type



Demand Controllers (WDC-3000)

- High efficiency energy device certificate
- Electricity fare reduction by maximum demand control
- · Load management by time
- · Synchronous to KEPCO watt hour meter · Diversified measurements
- Automated calculation of electricity fare
- · Various value settings due to large LCD
- · Diversified communication method



Automatic Meter Reading Systems (AMRS) **Exclusive Line Method**

- · Economical installation, high communication reliability
- (Home network, home automation, multi air conditioner)
- Regular reading and reading on demand
- · Failure compensation
- Overall reading information
- Diversified reports



Oil Immersed Transformer

- Rating : 3P ~36kV ~80MVA
- · LS oil immersed transformer is a static inductive device that can step the voltage up and down
- transfer electrical power efficiently. · LSIS's transformer factory is equipped with state-of-
- the-art cleaning facilities and the best testing room.



LV Switchgears

- Rated voltage : 690V

- Available various options
- · Rated current : 630~5000A · Rated breaking current : up to 85kA · Standard : IEC 61439-2



· Wide application fields

Gas Insulated Switchgears Low & Medium Voltage Switchgears Bus Duct Systems Power Equipment Diagnosis · Preventive Maintenance HVDC



Cast Resin Transformer

· Rating : 3P ~36kV ~25MVA

The LS Cast-resin transformer has succeeded in combining the advantage of oil-filled and conventional dry transformer, which are fabricated with an epoxy resin. Applied for low noise and produced as high capacity and strong endurance against harmonic effect

Low & Medium Voltage Switchgears



Motor Control Centers

- Rated voltage : 690V
- · Rated current : 630~5000A
- Rated breaking current : up to 80kA
- Standard : IEC 61439-2
- Single and / or double front construction
- Safety considerations
- Withdrawable units

Low Voltage Equipment Medium Voltage Equipment Protection & Measurement Metering Transformer



MV Switchgears

- · Rated voltage : 7.2kV ~ 36kV
- · Rated current : Up to 4000A
- · Rated short time withstand current : Up to 50kA/3s
- · Degree of protection : IP4X
- Standard : IEC 62271-200
- · Certification : KERI, KEMA, CESI
- Compact & safety design
- Metal clad switchgear which compartments are divided by ground metal partitions



Busway System

- · Rated voltage : AC 1000V/DC 1500V
- · Rated current : Up to 7500A
- Rated short time withstand current : 220kA/1s (Cu/4,000A)
- · Degree of protection : IP54(Indoor)/IP65(Outdoor)
- Standard : IEC 60439-1, 2
- Certification : KERI
- Aluminum case plug-in busway
- Power distribution System of the optimum which substitutes cable



170kV GIS 170kV Gas Insulated Switchgears

- · Rated voltage : 170kV
- · Rated current : Up to 4000A
- · Rated breaking current : Up to 50kA
- · 3Phase encapsulated compact GIS
- · Hybrid extinguishing type Circuit Breaker
- · Motor spring mechanism

Gas Insulated Switchgears



25.8kV / 36kV GIS 25.8kV / 36kV Gas Insulated Switchgears

- · Rated voltage : 25.8kV / 36kV
- · Rated continuous current : Up to 3150A
- · Rated breaking current : Up to 40kA
- · Performance of large-current and high
- · Large current carrying capacity
- · High short-circuit interruption
- · Minimizing installation space and integrating control unit



72.5kV / 145kV GIS 72.5kV / 145kV Gas Insulated Switchgears

• Rated Voltage : 72.5kV / 145kV · Rated Current : Up to 3150A · Rated Breaking Current : Up to 40kA · 3Phase encapsulated compact GIS · Modular system makes easy to operate · Motor spring mechanism



BG2kV GIS 162kV Gas Insulated Switchgears	420k
· Rated Voltage : 362KV	· Kate
Rated Current : Up to 6300A	Rate
Rated Breaking Current : Up to 63 kA	 Rate
High short-circuit interruption (63kA)	• High
 High reliability Hydraulic type mechanism 	· Redu
 Horizontally designed 3Way DS/ES for Compactness 	by u

Gas Insulated Switchgears Low & Medium Voltage Switchgears Bus Duct Systems Power Equipment Diagnosis · Preventive Maintenance HVDC



245kV / 252kV GIS 245kV / 252kV Gas Insulated witchgears

· Rated voltage : 245kV / 252kV · Rated current : Up to 4000A Rated breaking current : Up to 50kA Minimizing installation space & High Reliability Hybrid extinguishing type Circuit Breaker Motor spring mechanism



V GIS

Gas Insulated Switchgears

ed voltage : 420kV

ed current : 4000A

ed breaking current : 50kA h reliability & Compact GIS

uces breaker vibration and guarantees safe installation

using horizontally designed circuit breakers

Low Voltage Equipment Medium Voltage Equipment Protection & Measurement Metering Transformer

Power Equipment Diagnosis · Preventive Maintenance

We provide comprehensive one-stop total solutions, from consulting engineering to power equipment preventive maintenance and power systems.

PQ Equipment

PQ equipment prevents any harmful elements from altering the electricity quality in electric systems. The DVR compensates for temporary voltage sags and swells, the SVC compensates for reactive power while stabilizing voltage, and the APF compensates current harmonics.





Dynamic Voltage Restorers (DVRs)

DVRs are inserted in series in distribution systems to compensate for low quality power such as voltage sags and swells and to supply high quality power.

· Rating : capacity-100/200/300/500kVA 1,000/2,000kVA voltage - 200/380/440V/6.6/22.9kV



Static Var Compensators (SVCs)

SVCs compensate for voltage fluctuation as well as reactive power online using power semiconductor elements to improve the quality of power supply. · Rating : 3P3W 380V, 440V, 6.6kV, 22.9kV, 500kVA-100MVA

- Compensates for lagging and leading reactive power and voltage
- Improves power factor, saves energy
- Compensates for flickers



Active Power Filters (APFs)

APFs eliminate the harmonics of source current by inputting an electric current (which has the same value as but contrary polarity to the harmonic current generated by nonlinear load) into the line. · Rating : 3P3W, 3P4W 100-400kVA Removes harmonics from non-linear loads such as rectifiers by using power transfer equipment



Substation Monitoring & Diagnosis

The substation monitoring and diagnosis

system is a web-based online diagnosis

the cause of failure by monitoring and

diagnosing the operation of substation

• Improves the stability and reliability

of power supply. Efficient and reliable

prevention and minimization of regular maintenance. Mid-and long-term data

equipment operation. Accident

trend management of equipment.

power facilities to improve the reliability

system which examines/forecasts

Systems

of power supply.

GIS Maintenance Solutions

- · Insulation diagnosis using UHF PD technology · Forecasting life expectancy of facilities by
- checking GCB contact wearing
- · Maintenance upkeep using GCB operation characteristics



Power Tr Diagnosis Solutions

- Deterioration diagnosis using DGA technology
 - · Maintenance strategy support





Gas Insulated Switchgears Low & Medium Voltage Switchgears Bus Duct Systems Power Equipment Diagnosis · Preventive Maintenance HVDC





LA Diagnosis Solutions

Deterioration diagnosis using harmonic analysis

O Futuring Smart Energy **Power Grid Solutions**

Low Voltage Equipment Medium Voltage Equipment Protection & Measurement Metering Transformer

HVDC High Voltage Direct Current

High Voltage Direct Current transmission systems convert alternating currents generated at power plants into direct currents for supply.

The converted currents are reconverted into alternating currents in the target location. The system is not limited by transmission distance, realizes less power loss and can be adapted to renewable energy facility to ensure provision of high quality electricity.





Transformer

This equipment transforms alternating currents and supplies them to thyristor



Thyristor Valve

The thyristor valve converts alternating currents into direct currents, and reconverts direct currents into alternating currents. It plays a core role in the equipment by separating alternating currents and direct currents system.

C&P (Control & Protection)

C&P controls and protects transformer, thyristor valve, and entire system at HMI (Human Machine Interface). HMI refers to the interface for operators to control all devices in HVDC.





Jeju HVDC Smart Center (HVDC test-bed)

Gas Insulated Switchgears Low & Medium Voltage Switchgears Bus Duct Systems Power Equipment Diagnosis · Preventive Maintenance HVDC



PLC Distributed I/O Servo Motor / Servo Drive HMI AC Drive PSC Automation Systems

Leading the Future World Class Product





	_		-
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	-		
5	_	•	_





PLC (Programmable Logic Controller) Distributed I/O Servo Motor / Servo Drive HMI (Human Machine Interface)

From production facility to information system, LSIS is creating core automation solution.

Ever since producing and supplying Korea's first programmable logic controller (PLC), LSIS has played a pivotal role in the history of automation equipment in Korea. From unit machinery to large-scale processes, the company has created an optimum automation environment based on the country's highest level of reliability and technology. While leading industrial automation and supplying optimum solutions for automobile companies, international airports, subways, power plants, and LCD production complexes, LSIS has had its industry-leading technology recognized by international certification organizations such as CE and UL. LSIS succeeded in developing the first Korean DCS with its own technology. Since then LSIS has established main control and

monitoring systems for various kind of industry field and now has most domestic references in automation system field and core process knowledge in various kind of industry field.

LSIS succeeded in developing the first Korean DCS with its own technology. Since then LSIS has established main control and monitoring systems for various kind of industry field and now has most domestic references in automation system field and core process knowledge in various kind of industry field.



Supply	2014~2012	2011~2010	2009~2008	2007~2006	2005~200
History [Automation Solutions]	 Water supply system PJT: XGR (Sri Lanka) STX oxidation neutralization device: XGT LGD M2 environment facility in Paju: XGI Vacuum forming machine, Hanil Vacuum: XGK Straw facility, Joil: XGT Gas scrubber, Hynix: XGK Conditioning equipment of meat processing facility, Toto Logistics: XGT 	 P8E chiller system, ventilation, vacuum pump, LGD: XGT KEPCO underground electricity facility monitoring and controlling system: XGK AP TECH LED processing facility: XGK, XP Mobile handset backlight production facility, NSTECH: XGK, XP OVIS, LSM, Postal concentration center: XGK, XP Battery line at Namgyeong plant, LG Chemistry: XGK, XP Jinseong Yeoncheon, Iksan, Gwangju water disposal system: XGR 	 C200, Ssangyong Motor: XGK, XP Paju CHP: XGR Catapult monitoring, Kukdong Electric Wire: XGT, InfoU Haman Incinerator: XGK Pyeonghae water disposal system: XGR, InfoU OLED facility, LGD: XGK, XP Stocker crane, LG Chem: XP 	 Overall process of commercial vehicle production, Tata Daewoo: XGT PLC Beijing Hyundai Motor: Smart I/O, XGB PLC J300 sub line, GM Daewoo: XGI PLC LCD glass tester, Gunsan plant, HANGLAS: GLOFA PLC Frame line, Hyundai / Kia Motor: XGK PLC Daejeon Water Disposal System: GMR PLC Integrated management system, Jeonnam environment facility: GLOFA PLC 	 Namyang frame line, LCD module facility, L PDP, LG Electronics: G Frame and assembly li GLOFA PLC Hankook Tire: GLOFA Tire Curing Machine, I GLOFA PLC
[Drive Solutions]	 ISKI water treatment system, Istanbul: Pump (Turkey) LUKOIL: Crude oil pump (Russia) PEC, EUAS: Power plant pump (Turkey) FORTUM Chelaybinsk power plant: Boiler feed pump (Russia) LA FARGE Cement: Ventilation fan (Philippines) Mitr Phol Sugar: Sugar cane crusher (Thailand) KSL Sugar: Boiler pump (Thailand) 	 TGC power plant: Water circulation pump (Russia) Gharb cement factory: ID FAN (Iran) Colterm: Home heating water supply pump (Rumania) SCG Cement: Cooling tower pump (Thailand) Ajinomoto: Cooling water supply pump (Thailand) IFC Seoul: Cooling pump IS7 Samsung SMD: Drive 	 Lotte Mart/Lotte Department Store: iP5A for air conditioning POSCO: iV5 for linkage line Naval crane, Doosan Heavy Industries & Construction: iV5 New model production, Ssangyong Motor: iS7 Beijing Hyundai Motor: iS5 Hyundai Motor: iS5 (Czech Republic) GS Caltex: Drive for oil reservoir and chemicals 	 Hanwha Chemical: Pump drive Pyeongtaek thermoelectric power plant: Drive Dongwha Chemical: 2nd drive Lotte Duty Free air conditioning: Pump Korea University Medical Center air conditioning: Pump KIOST air conditioning: Pump GS Caltex: Drive 	Hyundai Motor Manu KEPCO Honam facility Kia Motor (Hwaseong Daejeon Subway: Hig Incheon Airport Train Samsung Fine Chemic Gimpo International J
[Automation Systems]	 Kwangam water plant management system Seongnam water plant management system Yeongcheon sewage plant management system Ilsan combined cycle power plant S/T control system Dangjin thermal power plant control system of desulfurization #1~4 Songdo waste collection management system 	 4 river project:Geum river #6 section management system Han river restoration project:#4 section management system Paju Unjeong wastewater plant management system Bucheon GS power plant HRSG, S/T control system Hwaseong incinerator control system Paju waste collection management system 	 Kyeongnam area integrated water management system Soyanggang-Dam management system Seogwipo sewage culvert monitoring system Hyundai steel operation system(Utility) Cheongju incinerator control system 	 Amsa water plant management system Yecheon area waterworks management system Pohang sewage plant management system(Phase #1/2) Yeosu wastewater plant management system Paju LCD industrial complex SCADA system 	 K-water Seoul Metrop Management System Duksan water plant m Han river:#2 section se Pyeongtaek thermal p system Bucheon District Heat Daejeon incinerator #

AC Drive PSC (Power Semiconductor Components) Automation Systems

LSIS develops and provides products satisfying demands in and out of Korea as the leading automation solutions provider.

4

- , Hyundai Motor: XGT PLC LG Philips: XGT PLC
- lg Philips: XGT F GLOFA PLC
- line, Ssangyong Motor:

View

Nanjing plant, Kumho Tire:

2003~2000

- Beijing Hyundai Motor: Smart I/O
- Frame line, Ssangyong Motor: GLOFA PLC
- Nubira assembly line, Daewoo Motors: GLOFA
 PLC
- Postal concentration center: GLOFA PLC
- LCD P4 line, LG PHLIPS: GMR PLC
- ufacturing, Alabama: Drive (US)
- y: FDF, high-voltage drive
- g), ESCO PJT.: High function drive gh function drive for air conditioning
- a: Drive for air conditioning fan cals: Drive
- Airport: Drive for air conditioning
- Gangnam Shinsegae Department Store: Drive for air conditioning AHU
- GM Daewoo Bupyeong plant: Drive for 2nd FAN
- LG-Nikko: Drive for steel manufacturing pump
 POSCO power generation / steel manufacturing
- line: FAN drive • Electric PAN, LG Micron: PUMP drive
- politan Area Integrated
- management system
- ewage culvert monitoring system power plant boiler:#1~4 control
- ting Corp. boiler control system #2 control system
- K-water Seoul Metropolitan Area:phase #6 management system
- Seongnam water plant management system
- Honam thermal power plant boiler:#1~2 control system
- Samchully City-gas integrated management system
- POSCO Electric blower control system
- Seoul:Mapo resource recovery facility control system

PLC (Programmable Logic Controller) Distributed I/O Servo Motor / Servo Drive HMI (Human Machine Interface)

PLC XGT Series



XGR

- · Base, power, CPU, network redundancy
- Processing speed : 42ns/step
- Max. I/O points : 131,072
- · Total memory : 32MB (program 7MB, data 2MB,
- reserved 7MB, flash 16MB) · Max. 31 expansion base
- Switching over time : 4.3 ~ 22ms IEC 61131-3 standard language
- · Enhanced maintenance via system history and network ring configuration



XGI

Processing speed : 8.5ns/step Max. I/O points : 6,144 Program capacity : 384k ~ 4Mbyte Max. 7 expansion base IEC61131-3 standard programming - LD (ladder), SFC (sequential function chart) ST (structured text), User defined FB (function block) Powerful built-in PID and process control

- Max. 256 loops and variety of process functions



XGK

Processing speed : 8.5ns/step Max. I/O points: 6,144 · Total memory : 64k ~ 256Kstep Max. 7 expansion base

PLC XGB Series





XGB(XBC/XEC U)

- Standard type
- Processing speed : 0.06µs/Step Max. I/O points : 352
- Program capacity : 32Kstep
- · Extension to as many as 10 layers
- · Max. 2 high speed backplane expansion module
- · Built in 2 port ethernet, high speed counter, positioning
- analog I/O, web server, serial(232C, 485)
- · 3 types Standard, built in analog, built in positioning

Analog Type · Built in AD 4ch, DA 4ch · Include Standard functions

PLC XGB Series



XGB(XBC/XEC E)

- · Processing speed: 0.24µs/step
- Program memory: 50KB
- · Max 38 DI/DO points control
- · Max 2 option modules
- Max 2 comm. Ch: programming 1Ch, built-in 1Ch (RS-232C or RS-485)

PLC GLOFA-GM Series



GLOFA-GM4 / GM4C

- · Processing speed : 0.2µs/step, 0.12µs/step · Max. I/O points : 2,048, 3,584
- · Program capacity : 128Kbyte, 1Mbyte
- · Max. 3, 6 expansion base · Real number calculation support

GLOFA-GM6

Max. I/O points : 384 Program capacity : 68Kbyte



GLOFA-GM7U

• Processing speed : 0.1 µs/step Max. I/O points : 120 Program capacity : 132Kbyte · Built-in function : PID, Cnet, etc.



XGB(XBC/XEC H)

- · Processing speed: 0.083µs/step
- Program memory: 200KB · Max 384 DI/DO points control
- · Max 10 modules extendable (Max 2 Comm. modules)
- · Max 5 comm. Ch: programming 1Ch, built-in 2Ch (RS-232C,
- RS-485), comm. 2 modules Powerful built-in functions (Comm./HSC/PID)
- · RTC (Real Time Clock) and USB I/F

PLC MASTER-K Series



MASTER-K200S

Processing speed : 0.5µs/step · Max. I/O points : 384 · Program capacity : 7Kstep

- Processing speed : 0.5µs/step















XGB(XBC/XEC SU)

- Processing speed: 0.094µs/step
- · Max 5 comm. Ch: programming 1Ch, built-in 2Ch (RS-
- 232C, RS-485), comm. 2 modules Powerful built-in functions (Comm./HSC/PID)
- · RTC (Real Time Clock) and USB I/F
- Program memory: 200KB · Max 284 DI/DO points control · Max 7 modules extendable (option + expansion modules)

AC Drive PSC (Power Semiconductor Components) Automation Systems





Positioning type

- · Built in pulse positioning 4axes
- Include Standard Functions



XGB(XBM)

- Processing speed: 0.16µs/step
- · Program memory: 10kstep
- · Max 256 DI/DO points control
- · Max 7 modules extendable (Max 2 Comm. modules)
- · Max 5 comm. Ch: programming 1Ch, built-in 2Ch (RS-232C, RS-485), comm. 2 modules



MASTER-K120S

- Processing speed : 0.1µs/step
- · Max. I/O points : 120
- Program capacity : 10Kstep
- · Built-in function: PID, Cnet, Positioning, HSC

PLC (Programmable Logic Controller) Distributed I/O Servo Motor / Servo Drive HMI (Human Machine Interface)

Distributed I/O



Block Type SMART I/O

- · Compatible with Modbus, Profibus DP, Devicenet, Rnet · Suited for medium and small scale network
- system
- · Small size



Extension Type SMART I/O

- · Open protocol Profibus-DP, Devicenet, Ethernet/IP, Modbus/TCP, Rnet · Suited for medium and large scale system
- · Wide extension of input/output · Maximum 256 points
- 100% compatible with XGB I/O module

Servo



XDL (Servo Drive) / XML (Servo Motor)

- · 200V : 100W ~ 3.2kW / 5kW · 400V : 1kW ~ 3.5kW / 7.5kW / 15kW · High resolution serial type encoder (~19bit) - Accurate position control and improved stability at low speed
- Motion network type(EtherCAT)-XDL N Series 100BASE-TX(100Mbps) Ethernet based real-time communication
- · Serial communication (RS-422/485, Modbus)
- CSP, CSV, CST, PP, PV, PT, HM, IP

HMI iXP / XP Series



XP 90 / 80 / 70 / 50 / 30-TTA

- Screen size : 38cm(15") / 31cm(12.1") / 26cm(10.4") / 21cm(8.4") / 14cm(5.7") · TFT color : 1024x768 / 800x600 / 640x480 / 640x480
- / 320x240 · Display color : 65,536
 - · 8-wire system, analog
 - · 10/100 Base-T Ethernet, USB
 - RS232C, RS422/485
 - CR memory card

Servo Solution



Motion Module (EtherCAT)

- · 32 axes (master) and 4 axes (virtual) control
- · EhterCAT CoE supported servo drive
- · Communication cycle : 1ms
- · Built-in DI/DO 8 points each and EtherCAT I/O 512 points
- · Program 2MB
- · External encoder input 2ch (line drive) · Max. transmission distance : 100m



Positioning Module (Network Type)

- XGF-PN8A : Dedicated LSIS EtherCAT Network Support (XGT Servo N Series) XGF-PN8B : Standard EtherCAT Network
- Direct connect with servo driver Max 8
- 2~8 axis linear interpolation, 2axis circular
- interpolation, 3axis helical interpolation

Positioning Module (XPM)

- Max 4Axis, Max pulse output 4Mpps · Circular/linear/ellipse/helical interpolation
- Asymmetric acceleration and deceleration driving
- FRAM parameter
- XG-PM monitoring, simulation, trace
- · CAM profile program





XP10-BKA / BKB

- · Screen size : 10cm (4.1")
- Text display
- Built-in RTC



XP40-TTA / TTE

· CR memory card

· 10/100 BASE-T Ethernet, USB





- - MONO (192 x 64 graphic LCD)
 - RS232C, RS485



Support(XGT Servo XDL Series)

- Position, speed, feed control is possible through the
- various operation
- CAM for controlling up to eight different types of
- CAM data

- - - · Support Full-closed control (Network type)
 - · Support various operation modes
 - · Safe torgue off function · Linked with LSIS's XGT PLC

iXP 90 / 80 / 70 / 50-TTA Screen size: 38cm(15") / 31cm(12.1") / 26cm(10.4") / 21cm(8.4") · TFT color : 1024x768 / 800x600



· USB host 3ch and device 1ch

SD memory card interface

AC Drive PSC (Power Semiconductor Components) Automation Systems





XP 50 / 30-TTE, XP-BTA/BTE

- Screen size : 21cm(8.4") / 14cm(5.7")
- TFT color : 640x480 / 320x240
- · SIN MONO (8-bit gray scale)
- · 4-wire system, analog
- · RS232C, RS422/485
- CR memory card



S/W HMI



XGT InfoU

- Integrated development environment for interactive user interface
- Direct import tag database for LS PLC software
- Open architecture meets industrial standards (OPC, OLE DB, etc.)
- Easy to use
- Program development environment for simple application

PLC (Programmable Logic Controller) Distributed I/O Servo Motor / Servo Drive HMI (Human Machine Interface)

AC Drive



S100 (Standard VFD)

1 phase 0.4~2.2kW (0.5~3HP), 200~230V 3 phase 0.4~15kW (0.5~20HP), 200~230V 3 phase 0.4~75kW (0.5~100HP), 380~480V

- · Selectable V/f, sensorless control
- · Side by side installation
- Built-in Safety torque off (STO)
- · Starting torque (200%/0.5Hz)
- Built-in EMC filter · Built-in DC reactor (30~75kW)
- · Communication (Option) : EtherNet, CANopen, Profibus
- · IP66(NEMA4X) Enclosure (Option) : 200/400V 0.4~22kW



H100 (HVAC Specialized VFD)

3 phase 5.5~18.5kW (7.5~25HP), 200~230V 3 phase 5.5~90kW (7.5~125HP), 380~480V

- Specialized functions for HVAC : RTC, Fire mode, Pump clean, Soft fill, Multi motor control function (MMC)
- User macro function
- · HVAC optimized LCD Keypad (Hand/Off/Auto) USB connectivity
- Built-in EMC Filter (400V 5.5~55kW) Built-in DC reactor (37~90kW)
- · Built-in BACnet, Modbus-RTU, Metasys-N2 communication Communication (Option) : Lonworks



C100 (Compact VFD)

1 phase 0.1~2.2kW (0.2~3HP) 200~230V 3 phase 0.1~3.7kW (0.2~5HP) 200~230V 3 phase 0.4~7.5kW (0.5~10HP) 380~480V Selectable V/f, sensorless vector control · Built-in EMC filter (option)

- Side by side installation
- · KEB for safe operating stop · Compliance with safety requirements
- FN ISO 13849-1 PI d
- EN 61508 SIL2 (En60204-1, stop category 0)
- Integrated potentiometer
- · Parameter copy unit



iV5 (Full Flux Vector Control VFD)

3 phase 2.2~37kW (3~50HP), 200~230V 3 phase 2.2~800kW (3~1.070HP), 380~480V DC Input 5.5~500kW (7.5~666HP), 380~480V

- Ultimate performance solution for system drive
- Advanced speed & torque control(200%) instantaneous torque: max. 250%)
- · Precious speed & position synchronization operation
- Static motor parameter auto-tuning
- · Synchronous motor sensorless control
- (SPM & IPM motors)
- Built-in dynamic braking transistor (2.2 ~ 22kW[3 ~ 30HP])



M1000

- 3kV. 3.3kV 200~3.700kVA / 4.16kV 250~4.700kVA 6kV. 6.6kV 400~7.500kVA / 10kV 600~11.000kVA 11kV 600~12.500kVA
- · Multi-level H-bridge cascade topology
 - · Synchronous transfer (for multi motor start)
 - · Ride through · Anti current hunting algorithm

 - and low MTTR
 - multi language support
 - · Wide communication interface for a variety of network
 - protocols
 - Enclosure type IP21 as standard and IP42 as option

PSC(Power semiconductor) **Module**



iG5A (Compact VFD)

- 1 phase 0.4 ~ 1.5kW (0.5 ~ 2HP), 200 ~ 230V 3 phase 0.4 ~ 22kW (0.5 ~ 30HP), 200 ~ 230V 3 phase 0.4 ~ 22kW (0.5 ~ 30HP), 380 ~ 480V
- · Selectable V/F, sensorless vector control
- Motor parameter auto-tuning Powerful torque at overall apeed range
- · IP20 enclosure. UL type 1 (option)
- · Built-in RS 485 (LS Bus/Modbus RTU) communication



iS7 (Premium VFD)

- 3phase 0.75~75kW(1~100HP), 200~230V 3phase 0.75~375kW(1~500HP), 380~480V
- · Constant torque/variable torque dual rating
- Selectable V/F, sensorless, sensored vector control · Available IP54 enclosure (0.75 ~ 22kW[1 ~ 30HP]) as built-in option
- Built -in RS485 (LS Bus/Modbus RTU) Communication
- · Available EMC filter & DC reactor as built-in option EMC filter (0.75 ~ 22kW)/DC reactor (0.75 ~ 160kW)



iP5A (Fan & Pump Specialized VFD)

3 phase 5.5 ~ 30kW (7.5 ~ 40HP), 200 ~ 230V 3 phase 5.5 ~ 450kW (7.5 ~ 600HP), 380 ~ 480V

- · Specialized functions for fan & pump: Advanced PID control (Pre-PID, Dual PID) Multi motor control function
- (Up to 4 motors: 5.5 ~ 90kW)
- Selectable V/E sensorless vector control
- · Built-in RS485 (LS Bus) communication
- · Communication (Option) : Modbus RTU, Devicenet, Profibus-DP, Lonworks, Bacnet



Simple Solution Power Module (SISPM0)

- Features
- The Latest IGBT Technology
- Low power dissipation
- Optimized anti-parallel diodes
- Various circuit configurations
- Single phase CIB(PIM)/ 3 phase CIB(PIM)
- · Product range - 600V 10A ~ 30A
- 1200V 5A ~ 10A



Simple Solution Power Module (SISPM1)

- Features
- The Latest IGBT Technology
- Low power dissipation
- Optimized anti-parallel diodes
- Various circuit configurations
- Single phase CIB(PIM)/ 3 phase CIB(PIM)
- Product range
- 600V 10A ~ 50A
- 1200V 8A ~ 25A

AC Drive PSC (Power Semiconductor Components) Automation Systems

Medium Voltage Drive Energy Saving Drive Solution

- · Independent power cell handling for easy maintenance
- · Customer oriented HMI screen for monitoring with



M1000A

3kV. 3.3kV 200~600kVA 6kV. 6.6kV 400~1.200kVA

- · Multi-level H-bridge cascade topology
- · Synchronous transfer (for multi motor start)
- Ride through · Anti current hunting algorithm
- Independent power cell handling for easy maintenance and low MTTR
- Customer oriented HMI screen for monitoring with multi language support
- · Wide communication interface for a variety of network protocols
- Enclosure type IP21 as standard and IP42 as option



Super Solution Power Module (SUSPM1/2/3)

Features

- 2 pack half bridge
- The latest IGBT technology
- Low power dissipation
- Optimized anti-parallel diode
- Operation frequency up to 40KHz
- Product range
- 600V 75~400A
- 1200V 50~400A

PLC (Programmable Logic Controller) Distributed I/O Servo Motor / Servo Drive HMI (Human Machine Interface)

Process Solution







Water & Waste Water

Water treatment includes the treatment and management of all water resources including water treatment for making clean drinking water, sewage water treatment, and industrial wastewater treatment. In order to automate such water treatment systems, we not only design and install control systems but also provide total solutions encompassing equipment manufacturing and tests as well as application software, testing, education and after-sales services.

Power Plant

Power plant control systems are said to be the core of operating power facilities since they shorten daily and weekly boiler start-up times while also ensuring reliability, safety, and efficient operations by improving load follow-ups and operation utilities maintenance

LSIS provides solutions for establishing the main control systems and power plant integration control systems required for efficient management and accident analysis.

Community Energy System

Community energy system is supply high temperature exhaust gas heat its form of steam or hot water to a local community with its energy requirements.

Small Hybrid Power

Small Hydro Power is less than 10,000 kw of installed capacity of hydroelectric power. Small hydro power system is power generation by using a low fall turbine mainly, and provides monitoring and control solution about Valve & Gate, aberration and generators, pumps and other major equipment.

Waste Transfer System

As an alternative for environment problem and existing inefficient collection and transport of waste, waste transfer system uses underground transferring pipe line for collection and transport of waste

Incinerator

Control System in incineration process performs integrated control & monitoring of pumps, valves, measuring devices in order to make sure that entire incineration plant are run efficiently according to regulations on environment pollution.

City Gas

Master-RTU for city gas facilities collects data from field devices and sensors such as governer, MOV and etc. to send it to SCADA system in central center via wired/ wireless communication line. And it receives commands from SCADA and performs on-line & real time control as well

Industrial Integration Solution



Distributed Control System



SCADA & RTU

MASTER-RTU SYSTEM

The Remote Terminal Unit (RTU) collects data from field instruments & sensors and transmits the information to the Supervisory Control and Data Acquisition System (SCADA) installed in a central control room through wire/wireless communication systems and lines, and receives control commands from the telemeter telecontrol system to conduct online controls in real time

AC Drive PSC (Power Semiconductor Components) Automation Systems

Water Resources Integrated Management Solution

The Water Resources Integrated Management Center performs remote control and monitoring of every local station to support the creation of synergy in operating each local station.

Water Treatment Production Planning Solution

Water treatment production planning solutions consist of a water demand forecasting system, a water pumping and supplying system, a facility information management system, a pipe-line network analysis system, a status monitoring system, and web monitoring so as to forecast local water demand, establish a supply plan, and monitor the plant's operating status.

Energy Integrated Management Solution

By consistently meeting customers' energy demands and saving energy at iron & still mills, this solution maximizes the recovery rate of exhaust energy (gas, vapor, etc.) from the manufacturing process, providing energy to each part of the mill where it is needed

Sewage Integrated Management Solution

This consists of a sewage pipe-line maintenance and management monitoring system, a sewage treatment process diagnosis system, a facility information management system, a sewage operation information system, and a sewage pipeline network monitoring system to monitor and control, from sewage treatment to sewage pipe-line management.

MASTER P-5000

Master P-5000 is optimized to redundant monitoring and control for high level process in power/steel/chemical industry and etc. based on the core knowledge of power generation control and most supply records including development/design/ manufacture /commissioning test which have been accumulated while LSIS has provided main control systems to Honam power plant's boiler No.2, Peongtaek power plant's boilers No.1, 2, 3 and 4, and Ilsan combined cycle power plant (HRSG, BOP, Turbine)

MASTER P-3000AT

The product is basic model of LSIS Distributed Control System used in perfect redundancy controlling of various process including water treatment, Incinerators. It is optimal solution to water treatment process with many domestic water project. LSIS supplied Monitoring and control system to Duksan Water Treatment Plant, JeonJu Sewage Treatment Plant, Jeju Sewage culvert System.



Smart Grid Photovoltaic Solutions Railway systems Electric Vehicle Components



Leading the Future World Class Product





O Futuring Smart Energy **Convergence Solutions**

Project (2008~2010)

(2006~2010)

GyeongBu High Speed Railway Phase 1Electrical System Project

Convergence of the nature, people, and technology to make new things possible.

In addition to future automotive technologies such as environment-friendly vehicle inverters, advanced EV-relays, and electric car charger components, LSIS innovative smart grid technologies enable the optimum power grid operation and maximum efficiency power supply control required to create a green energy environment.

In the field of power generation, LSIS provides photovoltaic systems, a pollution-free and limitless source of energy, through a one-stop service that includes consulting, construction, and follow-up service. All in all, LSIS is a leader of convergence technology.



Supply History [Smart Grid]	 EMS (Energy Management System) Next Generation Energy Management System (2011.12~2014.11) Jeju Test-bed TOC EMS (1st Phase: 2009.12~2011.05, 2nd Phase: 2011.06~2013.05) Development of National Funded Project "K-EMS" (2005.11~2010.10) Installation of Jeju EMS (2004) 	SCADA (Supervisory Control And Data Acquisition) • Incheon Airport 3rd Phase SCADA (2013.08–2017.10) • Iraq DCC SCADA (2013.01–2014.12) • Jordan Disi Water Drawing Project (2013.01–2013.12) • Iraq MED/RED Project (2011–2012)	DMS/DAS (Distribution Management/Automation System) • ncheon Airport Project FRTU (2nd:2005.04~2008.06, 3rd Phase: 2013.08~2017.10) • Rural Development Administration (RDA) FRTU (2014.03~2014.12) • Cheongwadae (The Blue House) PJT FRTU (1st : 2002~2004, 2nd :2005, 3rd Phase: 2014.01~2014.12) • Busan Jeongkwan FRTU and DAS (2007~2009)
[Photovoltaic Solution]	Residential • Annual Exports Surpassed 100MW in Japan (2014) • Launched Green Home Installation in Korea (2004)	Commercial • Shihwa Lake 100kW Water Floating PV System (2013) • Chungju Hospital 165kW PV System (2011) • Bangladesh 105kW Module Exportation (2011) • Greece 110kW Module Exportation (2011) • Belgium 140kW Module Exportation (2011)	Power Plant • Hapcheon Dam 500kW Water Floating PV System (2012) • Bulgaria 14.5MW PV Plant (2012) • Japan Mito City 140MW PV Plant (2012) • Afghanistan 1MW PV Plant (2012) • Renault-Samsung Component Center 1MW PV System (2011)
[SOC]	High Speed Railway • Suseo High Speed Railway Signalling System & Electrical System Project (2014-2015) • HoNam High Speed Railway Signalling System & Electrical System Project (2012-2014)	Main Line Taiwan TaiDong Electrical Interlocking System Project (2013-2014) Bangladesh Railway 13 Stations Modenisation Project (2012-2015) Bangladesh Double Track Line Signalling System Project (Laksam – Chinki Astana) (2012-2015)	LRT • Incheon International Airport 3 phase IAT E&M Project (2013– 2017 • Wooi-SinSeol LRT Electrical System Project (2012–2016) • Incheon International Airport Magnetic Levitation Railway Electrica System Project (2010–2012)

- (Laksam Chinki Astana) (2012~2015)
- GyeongBu High Speed Railway Phase 2Train Control System Bangladesh Double Track Line Signalling System Project
 - (Tongi Bhairab Bazar) (2011~2015)
 - Thailand ST4 Double Track Line Signalling & Communication System (2009~2011)

- System Project (2010~2012)
- Incheon Line 2 E&M Project (Participation of E&M Consortium) (2009~2016)
- Busan-Gimhae LRT Electrical System (2007~2011)

Smart Grid Photovoltaic Solutions Railway systems **Electric Vehicle Components**

From future automotive technology to green electric power IT, LSIS advanced electric and automation technologies protect the earth.

EES (Electrical Energy Storage Systems) • SCE (Southern California Edison) Residential EES Test-bed in North America, Acquirement of UL Certification(2012) • Smart Grid Project in Busan 1.03MWh EES System (2013)

- 5MW EES/ PCS in Samsung SDI (2014)
- KEPCO Wind Generation PCS/STATCOM in Sin-An(2014)
- Development of National Funded Project "Smart Renewable" (2009.12~2013.05)
- KEPCO Frequency Regulation 16MW EES/ PCS (2014)

Metro
Seoul Metro Phase 3
Consul Masters Lines 7 In

17)	 Seoul Metro Phase 3 (Line 9, 2 Stage) Electrical System (2012~2015)
	 Seoul Metro Line 7 Implemented Control System (Signalling System,
cal	Electrical System, Communication System) (2009~2013)
	 Sinbundang Line SCADA System (2008~2011)
	• Busan Metro Line 2 3 Stage 1 Phase (Hopo ~ Joongbu)
	Signalling System (2005~2008)

Daegu Metro Line 2 Electrical System (2002~2004)

Convergence Solutions

Power IT EMS, SCADA, SAS, DMS

Customer Oriented Power Solution with the newest Digital Network System Integration and NewTrend Information Technology of Generation, Substation, Transformation, **Distribution and Customer!**



EMS (Energy Management Systems) Applies Open- Architecture and a general Database (ODBC, ADO)

Uses real time OS to process real time data Supports Economic Dispatch and Load Frequency Control to ensure stable power supply and operation Applies the Contingency Analysis program which simulates the effect of separating the power line and generator in cases of accident

Supports scenario restructuring and accident analysis in the event of an accident.



flawless communication with IEDs

resources and working tools

and alarm windows

point in real time

requirements

- SAS (Substation Automation Systems) Makes possible communication with various Intelligent Electronic Devices (IEDs) and analysis of the IED relay
- curve and accident function Increases the convenience of operation through the remote setting function of the IEDs, the bay-status
- indicating function, and others Provides support for large capacity data
- communication in real time by applying the Real time OS and TCP / IP Protocol
- Applies object-oriented technology to secure the flexibility, efficiency and reliability of data
- communication between software modules

LS-ILCMS Individual Light Control & Monitoring System

LS-ILCMS based on Computer and Power Line communication Technology (PLT) which sends the data to serial load circuit of constant current regulator and make it possible to control each airfield light's on and off by a group and individually.

LS-ILCMS realize an efficient ground control & surveillance by improving Safety, Reliability and User convenience comparing the existing system.

SCADA (Supervisory Control & Data Acquisition)

User-oriented graphic environment with full graphic

Possible to monitor and control the site in Viewport

Transmits the operating information relating to I/O

Support for making full use of IED functions through

Storage of long-term data using the relational database

Report generation with various formats reflecting user

OTS (Operator Training System) function support

DMS (Distribution Management Systems)

- Supports auto-tracing the point of accident Automatic decision function in breakdown mode (manual / automatic FI) Automatic separation and recovery support in the
- failed area Applies the SBO and CBO functions to secure the
- reliability of the control operation The composition of the hardware is designed to consider functional improvements and update functions through the downloading of the
- application program Supports various wired and wireless communication
- (RF, CDMA, optical communication and others) functions

A-SMGCS Advanced Surface Movement Guidance & Control System

A-SMGCS has a function of the followings to manage the aviation light system in all. This system is based on ILCMS by using Power Line communication Technology(PLT) which sends the data to serial load circuit of constant current regulator and make it possible to control each airfield light's on and off by a group and individually.

Safe and efficient ground movement in all weathers, this is the main objective of "A-SMGCS" by means of Airfield Individual Lighting Control. It realizes an efficient ground control & surveillance by improving Safety, Reliability and User convenience comparing the existing system.

EES Electrical Energy Storage System

Increases energy efficiency, promotes the use of renewable energy, and stabilizes power supply systems by storing electric energy for use when required



PCS for Commercial / Industrial 1MW EES

- Load leveling
- Peak shaving
- · Controls active and reactive power
- · Controls the electricity quality

EV Charging Infrastructure

LS IS produces portable EV Charger, Cordset. This product is convenient since it can be carried around and charges whenever the user is needed. AC Quick Charging Stand is optimized for chameleon type (the system converts into Quick charger or slow charger at different situation) which is customized for Renalut Samsung Cars. It is suitable for public transportation or taxi since it charges quickly.

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AC Quick Charging Stand

- AC Power Input/output : 43kW (380V, 63A)
- Power System : 3phase, 4wire
- Frequency : 60Hz
- 30mA 0.03sec
- Operating Temperature : -25 ~+50 [°C]
- Operating Humidity : 5~95%
- Outdoor Rated : IP44

SCP Smart Cabinet Panel

SCP is an Intelligent digital circuit box capable of energy demand management, power quality monitoring, electrical safety monitoring, and equipment monitoring for buildings and other large-scale consumers.



Smart Grid Photovoltaic Solutions Railway systems **Electric Vehicle Components**



· Emergency generation (Independent operation)



Residential 3kW-level (6.3kWh/9.45kWh/12.6kWh) EES

- · Available in UPS mode
- Possible to convert battery energy storage within 4msec
- · Possible to offer emergency backup energy storage for PC ,Server, communication devices via batteries
- · Long term use of batteries(Pouch Type)
- Available in installation outdoor(IP65)



- AC Charging Power Output : IEC 61851 MODE3
- Protective Device : Electric leakage circuit breaker,



Slow Charging Stand

- · AC Charging Power Output: Level2 : SAE J1772
- · AC Power Input/output : 7kW (220V, 32A)
- · Power System : 1phase, 2wire
- Frequency : 60Hz
- · Protective Device : Electric leakage circuit breaker, 30mA 0.03sec
- Operating Temperature : -25 ~+50 [°C]
- Operating Humidity : 5~95%
- Outdoor Rated : IP44



- · Load control, circuit breaker control
- · Status monitoring of devices and circuit breakers
- · Power quality meter, demand control
- · Monitoring of arc, earth leakage, over voltage, over current, temperature
- Aimed at real-time integrated control and demand response (DR)
- · Core equipment for constructing and operating smart and green buildings
- Pulse/kWh: 10,000 · PQ Event Record: Max 252
- Load Profile: Max 28,672 · Sag/Swell/Under Voltage/Over Voltage

[·] Safe and efficient ground movement in all weathers, this is the main objective of "LS-ILCMS" by means of Airfield Individual Lighting Control.

Photovoltaic System

LSIS has begun Photovoltaic Business for the first time in Korea from 1986. For past 28 years, LSIS has accumulated many experiences and know-how on various photovoltaic system and power system. Based on the Korea's the best electronics technology, we offer you optimal photovoltaic total solution from module, inverter, connection board, monitoring, engineering to After Service. In recent years, by entering global market like Japan, LSIS has increased not only domestic share but also international market share as well.







Large-Scale Photovoltaic System

LSIS offers products for large-scale(MW level) photovoltaic system and provides engineering solution for grid connection

Residential Photovoltaic System

LSIS provides various products and solutions from PV module to EES (Electrical Energy Storage) for Green Home Photovoltaic System



Water Floating Photovoltaic System

LSIS's eco-friendly photovoltaic system utilizes unused surface of water, so land is not required. Also takes advantage of water's natural cooling system which can help you achieve high efficiency. (Provides Water Floating PV Module)

Photovoltaic Inverter

LSIS PV inverter that realizes highefficiency and low distortion through the optimal current control based on its experiences and technologies related to the photovoltaic field.

LSIS is implementing 6-Sigma activity for the world's top quality control, targeting a zero defect rate and is built with a global standard product testing and assessment system to ensure the reliability of the product.



1 Phase Residential PV inverter

- On-Grid Transformer-less Type Rated Output Power 3/4/4.6kW
- Euro Efficiency 96% more · IP 65 Protection Class
- Launch in 2015



3 Phase Utility PV inverter

- · On-Grid Transformer-less Type
- · Rated Output Power 250/500kW • Euro Efficiency T.B.D
- IP 21 Protection Class
- · Launch in second half of 2014

Photovoltaic Module

LSIS has been manufacturing photovoltaic modules for more than 28 years. We are confident that this history-based experience can provide convenience and efficiency to make the best use of building Photovoltaic system. LSIS PV modules are all made in Korea with assuring credibility and the highest quality.



Web Monitoring System

LSIS Photovoltaic Web Monitoring System provides user-friendly interface. With our web monitoring system, users can easily check and manage power output, operating condition, error alert etc. that are sent from PV inverter.



Grid Sol HEMS, the Energy Management System

· Can monitor and control power related data such as in-house power consumption, PV power output, energy storage data, etc. using PC, IHD, Smart TV, Smart Phone, Tablet PC, etc. Designed with embedded server concept and connection from local through Wi-Fi access is possible.

Smart Grid Photovoltaic Solutions Railway systems **Electric Vehicle Components**



3 Phase Commercial & Utility PV inverter

- · On-Grid Transformer-less Type
- Rated Output Power 10/13/17/20kW
- Euro Efficiency 97.4/97.5/97.8/97.8%
- · IP 65 Protection Class



3 Phase Utility PV inverter

- On-Grid Transformer-less Type
- · Rated Output Power 350/500kW
- Euro Efficiency 97.9/98.2%
- · IP 21 Protection Class



Photovoltaic Monitoring Set

- IHD(in-home display)/ Measurement Unit
- Japan Residential Photovoltaic Monitoring Set
- · Uses 7 inch. Color LCD
- Communication Format: RS485 / RF 429Mhz
- · Data Logging is available
- · Certification : J-MIC

O Futuring Smart Energy **Convergence Solutions**

Railway system





Traffic Management Systems

With its advanced railway signaling system which can be used for railways, subways, and LRTs, LSIS Traffic Management System (TMS) provides total solutions that realize automatic train control & monitoring and train operation management with automated and computerized systems.





Electronic Interlocking Systems (LS-EIS 620)

The LS-EIS 620 controls signals, rail switches, and railway crossings, etc. without relays by selecting the entire electronic module to control the system safely and smoothly.



Electronic Interlocking Systems (LS-EIS 520)

The LS-EIS520 enables safe train operations by establishing software with a database of interlocking conditions such as track circuits, point machines, signals and block systems, and then analyzing, controlling and displaying the information on a microcomputer.



Automatic Train Controls

The ATC satisfies requirements of various customer needs for railways, subways, and LRTs with its enhanced safety and reliability based on safe train control and advanced electric/electronic & information processing technology.



Communication Management Systems

- · Digital Transmission System : Transmission of various equipment's information (communications, signaling, AFC, electric-power and administration) Train Radio Telephone System : Wireless communication system among train drivers and dispatchers
- Dispatch Telephone System : Providing dispatch telephone lines between each control room (operations, electric power, signaling, communications, accident prevention) and the railways or relevant departments



Passenger Information Systems

The PIS receives and processes train operation information, transmits it to the host equipment of each control room, and then accordingly informs passengers who are waiting on platforms. Smart Grid Photovoltaic Solutions Railway systems Electric Vehicle Components



Automatic Fare Collections

Through computerization, AFC enables efficient management of train station entrances, data processing, equipment monitoring, and collecting of financial and statistical data regarding ticketing, issuing of tickets, and supplemental fare adjustments.

O Futuring Smart Energy

Convergence Solutions

Electric Control Products HV Relay & BDU

Main Function of Relay and BDU is to stably supply and cut-off battery power.

LSIS designs advanced products to bring next-generation products to the market with innovative technology.



20A (GER020)

- · Pre-Charging Relay
- · 450Vdc, 20A · Dimension(WxHxD) : 41x43x32mm
- · Weight : 70g
- Coil Rated Voltage : 12Vdc
- Operating Temp. : -40~85°C



150A (GER150)

- Main Relay
- · 450Vdc, 150A
- · Dimension(WxHxD) : 81x70x39mm
- Weight : 380g
- Coil Rated Voltage : 12Vdc
- Operating Temp. : -40~85°C

Power Electronics PCU, DC/DC Converter, OBC

LSIS designs, develops, manufactures, and integrates power electronics such as PCU (Inverter), DC/DC Converter, and OBC (On board charger). With our engineering expertise and extensive knowledge, LSIS's development fits a variety of platforms and applications



- **PCU (GEI060)**
- Input Voltage : 240~400Vdc
- Max. Power : 60kW
- · Weight : 10kg Size (WxHxD) : 354x87x254mm
- · Water Cooling
- · Operation Temp. : -40℃~85℃
- Protection Class : IP67



OBC (GEC360)

- Output Voltage : 240~450Vdc
- · Weight : 6.9kg
- Size (WxHxD) : 303x84x226mm
- Operation Temp. : -40°C~85°C



- Output Power : 3.6kW
- Water Cooling
- Protection Class : IP69



DC/DC Converter (GED290)

- Input Voltage : 250~430Vdc Output Voltage : 10~15V
- · Max Output Current : 200A
- Rated Power : 2.9kW
- Weight : 2.8kg
- Size (WxHxD) : 170x65x220mm
- · Liquid Cooling
- Protection Class · IP67

Global Network

Domestic

Head Office

LS Tower, 127, LS-ro, Dongan-gu, Anyang-si, Gyeonggi-do 431-848, Korea Tel : 82-1554-2080 Fax: 82-2-780-9857

Cheongju Factory

95, Baekbong-ro, Heungdeok-gu, Cheongju-si, Chungcheongbuk-do, 361-720, Korea Fax: 82-43-261-6602 Tel : 82-43-261-6114

Cheonan Factory 56, Samseong 4-gil, Mokcheon-eup, Dongnam-gu, Cheonan-si, Chungcheongnam-do, 330-840, Korea Tel · 82-41-550-8114 Fax · 82-41-556-8408

Busan Factory 35. Hwajeonsandan 5-ro 117beon-gil, Gangseo-gu, Busan, 618-280. Korea Tel : 82-51-795-6114 Fax · 82-51-795-6169

HVDC Busan Factory 9, Hwajeonsandan 2-ro Gangseo-gu, Busan, 618-280, Korea Tel : 82-51-795-6114 Fax: 82-51-795-6169

R&D Campus 40, LS-ro 116beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 431-831, Korea Tel: 82-31-8090-7011

Power Testing & Technology Institute 95, Baekbong-ro, Heungdeok-gu, Cheongju-si, Chungcheongbuk-do, 361-720, Korea Tel : 82-43-261-6114

Cheongiu Training Institute 95, Baekbong-ro, Heungdeok-gu, Cheongju-si, Chungcheongbuk-do, 361-720, Korea Tel · 82-43-268-2631

Overseas branches

LSIS Shanghai Office, China

LSIS Beijing Office, China

LSIS Guangzhou Office, China

LSIS Qingdao Office, China LSIS Chengdu Office, China

Tel : 86-24-2321-9050 ISIS Jinan Office, China

LSIS Co., Ltd. Tokyo Office, Japan Tel · 81-3-6268-8241

LSIS Co., Ltd. Rep. Office, Vietnam Tel : 84-8-3823-7890

LSIS Detroit Office, U.S.A.

LSIS Moscow Office, Russia

LSIS U.K. Office, United Kingdom



400A (GER400)

40A (GER040)

· 450Vdc, 40A

· Weight: 156g

· Pre-Charging Relay

· Dimension(WxHxD) : 67x47x35mm

· Coil Rated Voltage: 12Vdc, 24Vdc

• Operating Temp. : -40~85°C

- · 450Vdc 400A · Dimension(WxHxD) : 100x91x58mm
- Weight : 700g
- Coil Rated Voltage · 12Vdc 24Vdc
- Operating Temp. : -40~85°C
- · Main Relav

Overseas subsidiaries

LSIS(Dalian) Co., Ltd._Dalian, China

No. 15, Liaohexi 3-Road, Economic and Technical Development Zone, Dalian 116600, China Tel: 86-411-8730-7510 Fax: 86-411-8730-7560

LSIS(Wuxi) Co., Ltd. Wuxi, China

No. 1, Lexing Road, Wuxi National High &New Tech Industrial Development Area, Wuxi214028, Jiangsu, P.T.China Tel: 86-510-8534-6666-8005 Fax: 86-510-8534-4078

LS Hukai Electric(Hubei) Co., Ltd._ Hubei, China

No. 100, Tanjiahe Road, Dianjun District, Yichang City, Hubei Province, 443004, China Tel: 86-717-667-7339 Fax: 86-717-667-7559

LS-VINA Industrial Systems Co., Ltd._Hanoi, Vietnam Nguyen Khe, Dong Anh, Hanoi, Vietnam Tel: 84-4-6275-8055 Fax: 84-4-3882-0220

LSIS(ME) FZE_Dubai, U.A.E.

LOB 19-205, JAFZA View Tower, Jebel Ali Free Zone, Dubai, United Arab Emirates Tel : 971-4-886-5360 Fax : 971-4-886-5361

LSIS Europe B.V. Netherlands

1st. Floor, Tupolevlaan 48, 1119NZ, Schiphol-Rijk, The Netherlands Tel : 31-20-654-1420 Fax : 31-20-654-1429

LSIS Japan Co., Ltd._Tokyo, Japan

Tokyo Club Building 13F, 2-6, Kasumigaseki 3-chome, Chiyoda-ku, Tokyo, 100-0013 Fax: 81-3-6268-8240 Tel · 81-3-6268-8241

LSIS USA Inc._ Chicago, U.S.A.

2000 Millbrook Drive, Lincolnshire, Chicago, IL 60069, United States Tel : 847-941-8240 Fax: 847-941-8259

32nd Floor, International Corporate City, No.3000 NorthZhongshan Road, Putuo District, Shanghai, China, 200063 Tel · 86-21-5237-9977 Eax · 86-21-5237-7189

Room 2306, Building B Landgent Center, No.24 Middle Road, East 3rd Ring Road, Chaoyang District, Beijing, P.R. China Tel : 86-10-5761-3127 Fax : 86-10-5761-3128

Room 1818-1820, Xinyuan Building, NO.898 Tianhe North Road, Tianhe District, Guangzhou, P.R China Tel: 86-20-8326-6784 Fax: 86-20-8326-6287

Room 2001, Galaxy Building, 29 ShanDong Road, ShiNan District, QingDao, ShanDong, P.R. China Tel: 86-532-8501-6058 Fax: 86-532-8501-6057

Room1710, 17/F Huamin Empire Plaza, NO.1 Fuxin Road, Chengdu, P.R. China Tel: 86-28-8670-3200 Fax: 86-28-8670-3203

LSIS ShenYang Office, China

Room 803, Hongyuan Building, 52 South Nanjing Road, Heping District, Shenyang, P.R. China Fax: 86-24-8386-7210

Room 317, Chuangzhan Center, No. 201, Shanda Road, Lixia District, Jinan, Shandong, P. R. China Tel: 86-531-8699-7826 Fax: 86-531-8697-7628

Tokyo Club Building 13F, 2-6, Kasumigaseki 3-chome, Chiyoda-ku, Tokyo, 100-0013 Fax: 81-3-6268-8240

Gema Dept Tower 18F, 6 Le Thanh Ton, District 1, HCM, Vietnam Fax : -

5700 Crooks Rd, Suite 211, Troy, MI 48098, USA Tel : 1-248-792-2637~8 Fax : 1-248-792-2642

LSIS Co., Ltd. India Office, India

109 First Floor, Park Central, Sector-30, Gurgaon- 122 002, Haryana, India

Tel: 91-1244-930-077 Fax: 91-1244-930-066

123610, Krasnopresnenskaya, nab., 12, building 1, office 1005, Moscow, Russia Tel : 7-495-258-1466/1467 Fax : 7-495-258-1466/1467

G17 Bedford I-Lab, Stannard Way, Priory Business Park, Bedford, MK44 3RZ, U.K. Tel : 44-012-3483-4774 Fax : 44-012-3483-4775



We guarantee all our customers a safe and affluent life and a happy future by supplying them with convenient smart energy.

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LS

A PROVIDER OF LEADING SOLUTIONS TO THE WORLD

Since its spin-off from the LG Group in 2003, aiming to intensify the specialty of each group, LSIS has accelerated its speed of growth and become a model for a successful spin-off. The LS Group is currently composed of 51 affiliates centering

on 7 flagship companies that have secured the top competitive strengths in their fields in Korea.

The LS Group will continue to pursue the management philosophy of the LS partnership to support each affiliate to grow into a global leader by creating greater value.

