

## » Hardware

### Built-in Programmable Logic Controller (PLC)

Built-in PLC set provides customized solutions which support wide coverage from small/middle – to large size-system.



Standard : RS-485  
Optional : Profibus, DeviceNet,  
Modbus, Metasys N2, LonWorks

PLC set, made by LSIS, is the next-generation solution with a new concept providing advanced engineering environment based on open network, fastest processing speed, compact size and user-friendly software.



## » Monitoring

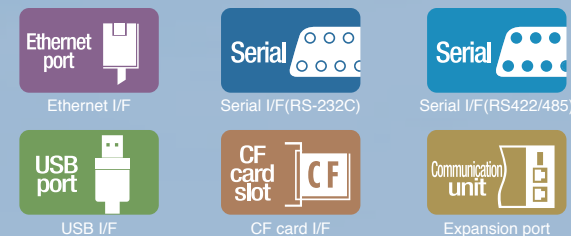
### Human Machinery Interface(HMI)

Touch screen for MV drive contains a brand new HMI product with an intensive and advanced technology of LSIS to cope with the rapidly changing market situation. It is an innovative product having both reliability and convenience based on Windows CE.

We are confident of our HMI which provides high technology and our commitment to quality of MV drive market.



#### External Interface



- 12.1 inch touch screen.
- High and vivid distinction with 65,536 colors.
- Read function of a controller's state information.
- Strengthened data management(Logging, Recipe, and Alarm).
- With the user-oriented convenience, it offers high resolution display, prompt data transmission and processing, and an user-friendly interface.

## Leading Solution for Your Investment Leading Solution for Your Development Leading Solution for Our Environment



LSIS always focuses on environment-friendly devices and energy management system to minimize greenhouse gas emission, waste of energy, and environmental pollution.

LSIS has been manufacturing drive solution for more than 30 years.  
This experience provides convenience and high efficiency that anytime, anywhere, anyone can use.



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 a 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.

### LSIS Co., Ltd.

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

2012. 04

LS Medium Voltage VFD(E) 2009. 03/(06) 2012. 04 Printed in Korea Pacomkorea

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## Medium Voltage VFD

Perfect Energy Saving Drive

3kV 200kVA ~ 3,700kVA / 4kV 250kVA ~ 4,700kVA  
6kV 400kVA ~ 7,500kVA / 10kV 600kVA ~ 11,000kVA  
11kV 800kVA ~ 13,000kVA





## » Circuit Configuration



### Master Control Section

- Easy-to-use high-function keypad on the door
- Touch-screen(HMI) interface on door
- Drive tool runs on PCs that can interface through the RS-485 is standard.

### Power Cell Panel

- Easy individual power cell can be drawn out for maintenance.
- Three cells connected in series per single output phase.

### Multi-Winding Transformer

Cell input voltage can be connected each terminal and 36pulse/18winding of dry type phase-shift transformer has equipped. Also it has constructed 5% tap for input voltage change.

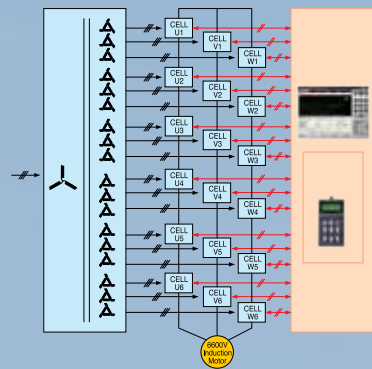
### Easy Maintenance

Power cells can be replaced and maintained individually. The construction designed for single-action mounting and removal reduces the replacement time and facilitates maintenance operations.

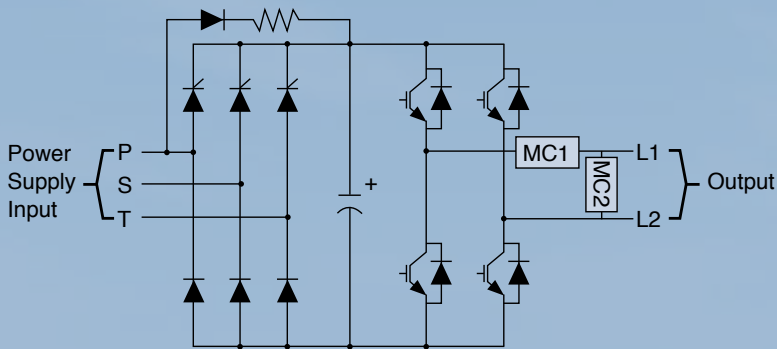
Engineered to continue operating through component failures that would completely disable conventional drives. The patented cell-based configuration maximizes availability, letting the customer determine the right time to perform maintenance, while the modular design reduces system repair time to minutes.



### 6.0 ~ 6.6kV Class



### Power Cell



## » Fields of Application

### Pulp and Paper

- Pumps
- Fans
- Refiners

### Chemical, Oil and Gas

- Mixers/Agitators
- Fans/Compressors
- Pumps

### Water and Waste

- Water Management
- Pumps

### Cement and Mining

- Mills
- Conveyors
- Fans/Exhausters
- Pumps

### Sugar

- Sugarcane Mills
- Fans/Exhausters
- Pumps
- Preparation

### Pumps

LSIS' unequalled experience was used to make MV Drive the perfect match for pump application. With a wide range of powerful standard features designed specifically for pump application, LSIS MV Drive provides the lowest overall cost of ownership of any drive available.

### Fans

LSIS MV Drive offers ease of setup and comprehensive fan and motor protection features. LSIS MV Drive can be configured for Simplex, Duplex or Triplex fan system applications. One MV Drive can be used as a master, which can also control one or two secondary fan motors. The secondary pump motors can be connected using mechanical motor starters, reduced voltage soft starters, or additional MV Drives. The most efficient method is fan speed control that will reduce energy consumption, while maintaining system optimization through LSIS MV Drive.

### Mills

The speed of the mill can be accurately controlled by LSIS MV Drive depending on the amount of objects coming into the machine. This is a great advantage compared to the use of the steam turbines and DC motors.

Another advantage is that the electrical drives can estimate the shaft torque and protect the mill against overload. In this case the mill can be driven in reverse to get the excess material out of the machine and resume normal operation with minimum production loss.

Furthermore, after shut down, the cane mill driven by LSIS MV Drive returns to operating conditions much faster than the steam turbine driven mill. Finally, LSIS MV Drive, the noise level is considerably reduced for both MV Drive and the motors and is almost negligible compare to that of steam turbine.

## » Service and Support

### Testing

LSIS is committed to ensuring the reliability of every drive it delivers. To verify that quality standards and customer requirements are fully met every component of a drive is subjected to thorough testing in optimized test facilities of LSIS.

### Training

LSIS provides extensive training for its MV Drives. A range of training programs is offered from basic tutorials to programs tailored to the customer's specific needs.

### Installation and Commissioning

Proper installation and commissioning of the equipment, done by qualified and certified commissioning engineers, reduces start-up time, increases safety and reliability and decreases life cycle costs. In addition, operators can be given practical training by experienced specialists on site.

### Life-Cycle Management

LSIS is committed to providing complete life-cycle support. We never relinquish the responsibility for servicing our products to your full satisfaction, regardless of the age of the product. To extend the life span and increase the functionality of the drive, the LSIS refurbishment program gives you the opportunity to upgrade the MV drives with new technology as it becomes available.

## » Technical Specification

Main power Supply	Voltage	3.3kV, 4.16kV, 6.6kV, 10kV, 11kV	
	Frequency	50Hz, 60Hz	
General Specification	Efficiency	Approx. 98.5% (At rated motor speed, 100% load)	
	Power Factor	Approx. 95.5% (At rated motor speed, 100% load)	
	Cooling Method	Forced air-cooling by fan	
	Input Current THD	Satisfies IEEE Standard	
	Input Transformer	Class H dry type, secondary multi-phase winding	
	Monitoring	12.1 inch HMI touch screen	
	Communication	Standard: RS-485, Option: Profibus, DeviceNet, Modbus, Metasys N2, LonWorks	
Control Specifications	Control Method	V/f, Sensorless Vector	
	Switching Device	IGBT(Insulated Gate Bipolar Transistors)	
	Main Circuit	Multi-level pulse width modulation(Multi-level PWM)	
	Freq. Control Range	0 to 120Hz	
	Drive Type	Voltage Source	
	Freq. Control Accuracy	± 0.1%	
	Freq. Resolution	0.01Hz	
	Accel/Decel Time	0.1 to 6000s	
	Overload Tolerance	120% for 60s	
	Main Control Functions	Synchronous Bypass	Flying start (speed search)
		Multi Motor Control	Manual and Auto Torque boost
		PID control	Upper/lower limits for frequency reference
		Copy function	Local/Remote Operation selection
		Frequency jump	Keypad with LCD + LED displays
		Jog function	Ride-Through (operating during momentary power loss)
		Auto-tuning	Fault Auto-diagnosis and Auto-reset
		Dwell	Independent acceleration and deceleration ramps
		Slip compensation	Direction of Rotation selection(FWD/REV)
		3-wire sequence	Password to protect drive programming
Protective Functions	Standard	Over current	Cooling-fan trip
		Overvoltage	Transformer overhear
		Under voltage	Cell fault
		Ground fault	Cell overheat
		Drive overheat	Drive overload
		Motor overheat	Communications error, etc.
Maintainability/ Environmental Specifications	Control Panel	Status display, Fault display, Parameter setting, Parameter reference	
	Protection Design	Standard : IP21, Optional : IP52	
	Main Circuit	Power cell construction	
	Ambient Temperature	-5°C ~ +40°C	
	Storage Temperature	-20°C ~ +60°C	
	Humidity	85%RH max.(no condensing)	