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T-solution Leader in Electrics & Automation
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Variable Frequency Drive / Inverter

Starvert iC5

0.4-2.2kW 1 phase 200-230Vts
0.4-0.75kW 3 phase 200-230Volts



Automation Equipment



LG Industrial Systems
www.lgis.com

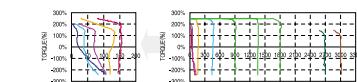
Features



LG Inverter iC5 Series

Sensorless vector control

The iC5 adopts sensorless vector control algorithm, and it improves not only the torque control characteristics, but the speed controllability in an uncertain condition caused by the load variation as well.



Auto tuning

The auto tuning algorithm in the iC5 sets the motor factors automatically that brings the traditional commissioning difficulties mainly in low speed by the load variation and the low torque generation to a settlement.

- Difficulty of measuring the motor constant ■ Input errors by an user
- Low torque in low speed ■ Low speed by the load variation ■ Setup by an expert



- Setup by an user ■ Improving torque in low speed
- Auto tuning of the motor characteristics ■ Optimized motor control

PNP and NPN switchable dual signals

The iC5 provides PNP and NPN signals for outside controllers. It works with 24Vdc regardless of the type of PLC or control signals.

Communication interface, ModBus-RTU

The iC5 provides the most popular communication interface, ModBus-RTU for remote control by PLC or other devices.

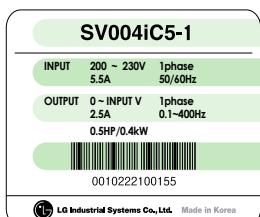
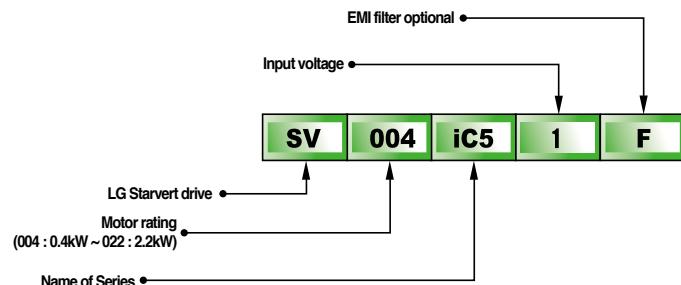
Programmable PID process control

PID process control is used in iC5 to make speed corrections quickly with a minimal amount of overshoot and oscillation for the control of flow, temperature, pressure and etc.

Models



Applicable motor	220V, single phase
0.4kW (0.5HP)	SV004iC5-1
0.75kW (1HP)	SV008iC5-1
1.5kW (2HP)	SV015iC5-1
2.2kW (3HP)	SV022iC5-1



Specifications



■ Specifications (200-230V class)

Model	SV004iC5-1	SV008iC5-1	SV015iC5-1	SV022iC5-1
Motor rating	[HP] [kW]	0.5 0.4	1 0.75	2 1.5
Output ratings	Capacity[kVA]	0.95	1.9	3 4.5
	FLA[A]	2.5	5	8 12
Voltage			Single phase, 200 to 230V	
Frequency			0 to 400Hz	
Input ratings	Voltage Frequency		Single phase, 200 to 230V (± 10%) 50 to 60Hz (± 5%)	

■ Control

Control method	V/F control, Sensorless vector control		
Frequency setting resolution	• Digital reference : 0.01Hz	• Analog reference : 0.04Hz/60Hz	
Frequency setting accuracy	• Digital : 0.01% of Maximum output frequency	• Analog : 0.1% of Maximum output frequency	
V/F ratio	Linear, Squar pattern, User V/F		
Overload capacity	1min. at 150%, 30sec. at 200% (with inverse characteristic)		
Torque boost	Manual(0 to 15% adjustable), Auto		

■ Operation

Input signal	Operator control	Keypad / Terminal / Communications
	Frequency setting	• Analog: 0~10V/4~20mA • Digital : Keypad • Communication : RS485
	Start signal	Forward / Reverse
	Multi-step	Setting up to 8 speeds (use multi-function terminal)
	Multi-step accel /decel time	0.1~600 sec, Max. 8 types available by multi-function terminal
	Emergency stop	Selectable accel/decel patterns : Linear, U and S
	Jog	Interrupting the output of the drive
	Fault reset	Jog operation
Output signal	Operation status & Fault output	Reset the fault when protective function is active
	Indicator	Frequency detection, Overload alarm, Stalling, Overvoltage, Undervoltage, Drive overheating, Run, Stop, Constant speed, Speed searching, Fault output (Relay and Open collector output)
	Operation function	Choose one from output frequency, current, voltage and DC voltage.(Output voltage : 0~10V) DC braking, Frequency limit, Frequency jump, Second function, Slip compensation, Reversing prevention, Auto restart, PID control

■ Protection functions

Drive trip	Overvoltage, Undervoltage, Overcurrent, Drive overtemperature, Motor overtemperature, I/O phase loss, I/O mis-wiring, Overload, External device fault 1,2, Loss of speed command, Hardware fault, Communication error, CPU error
Drive alarm	Stall prevention, Overload alarm
Momentary power loss	• Less than 15 msec : keeping operation • More than 15 msec : auto restart available

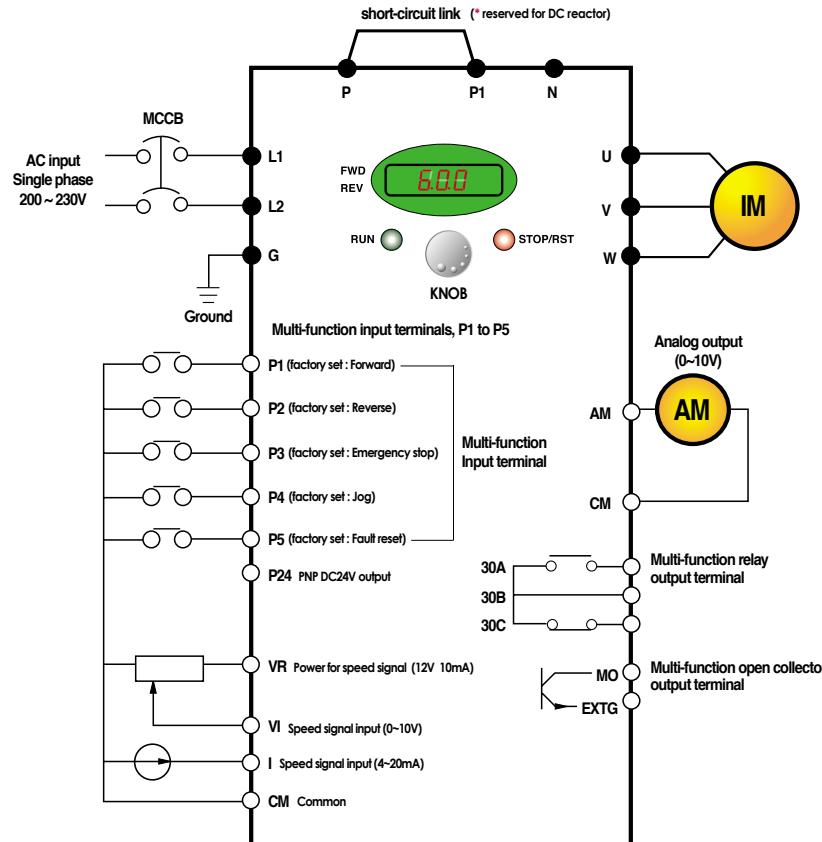
■ Display keypad

Operation information	Output frequency, current and voltage, Set frequency value, Operation speed, DC voltage
Trip information	Display the trip cause when the protection function activates. Recent 5 faults records stored

■ Environment

Operating ambient temp.	-10 ~ 40
Storage temperature	-20 ~ 65
Humidity	90%RH max.(non condensing)
Altitude & Vibration	1000m max. 5.9m/sec ² (0.6g) max.
Atmosphere	No corrosive gas, flammable gas, oil mist or dust
Pressure	70~104k Pa

Wiring



Terminal configuration



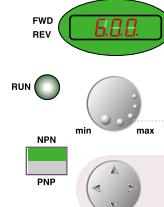
Terminal	Signal	Description
L1, L2	AC line input	Single phase AC line input
P1, N	Braking unit	Connecting braking unit (contact before ordering)
U, V, W	Drive output	3 phase output terminals to motor
P, P1	DC reactor	Connecting DC reactor
G	Ground	Chassis ground



Terminal	Signal	Description
Input	P1, P2 P3, P4, P5 P24	Multi-function input PNP DC24V output
	VR VI I CM	Frequency setting power Frequency setting(Voltage) Frequency setting(Current) Common
Output	AM-CM 330A, 30C 30B MO-EXTG	For monitoring Multi-function relay and Open collector output Terminal

Terminal	Signal	Description
Input	P1, P2 P3, P4, P5 P24	Used for multi-function input. Factory default settings are as follows. P1 = FX, Forward P2 = RX, Reverse P3 = BX, Emergency stop P4 = JOG P5 = RST, Fault reset PNP DC24V output DC24V power supply in case of PNP mode
	VR VI I CM	Power for Analog frequency setting. Maximum output is +12V 10mA Input DC 0 to 10V to set frequency. Input resistance is 20kΩ Input DC 4 to 20mA to set frequency. Input resistance is 250Ω Common terminal for the analog frequency setting signal and the FM(for monitoring)
Output	AM-CM 330A, 30C 30B MO-EXTG	Output one out of Output frequency, Output current, Output voltage and DC voltage. Factory default set is to Output frequency. Maximum output voltage = 0 to 12V, output current = 10mA To interrupt the output when the protection function activates or output multi-function signal. Multi-function relay terminal : Max. AC250V/1A, DC30V/1A Open collector output terminal : Max. DC24V 50mA

Keypad



Key	Function	Description
RUN	Run key	To operate the drive
STOP/RESET	Stop/Reset key	To stop operating or reset in case of fault
KNOB(Volume) NPN/PNP	Program/Enter Frequency Selection	To change parameters and save them To change the frequency Mode selection between NPN and PNP
Up	Up	To increase the parameter values
Down	Down	To decrease the parameter values
Left	Left	To move the cursor left
Right	Right	To move the cursor right



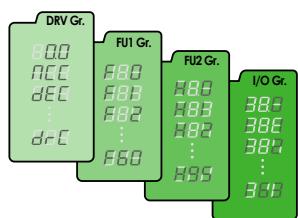
Program parameters

Parameter group

There are 4 parameter groups to set parameters properly for the operation.

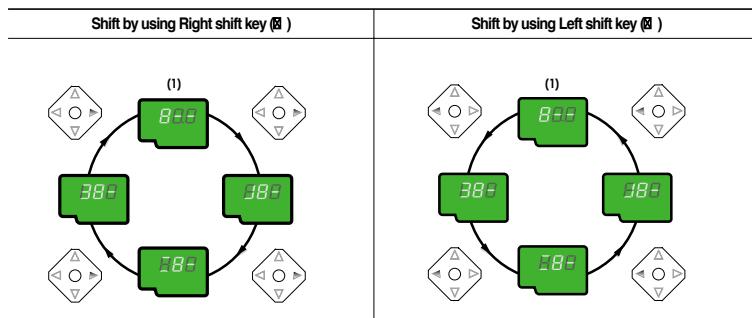
Group	Description
Drive group	Basic parameters such as Command frequency, Accel/Decel time, etc.
Function 1 group	Basic functional parameters such as Max. frequency, Torque boost, etc.
Function 2 group	Application parameters such as Frequency jump, Max/Min. of limit of frequency, etc.
Input/Output group	Parameters to construct the sequence such as Multi-function terminal setting, Auto operation, etc.

Parameter group navigation



Drive group	Basic operation parameters such as Command frequency, Accel/Decel time, etc.
Function 1 group	Basic functional parameters for adjusting Output frequency, Voltage, etc.
Function 2 group	Application parameters of PID operation, The 2nd motor setting, etc.
Input/Output group	Parameters to construct the sequence such as Multi-function terminal setting, etc.

Shifting between groups is possible only in the first code of each group.



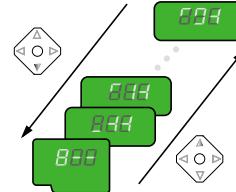
(1) The value of the Command frequency will be displayed in the first code of the Drive group.

If will show the value set by the operator. The factory set value is 0.0.



Program parameters

Parameter navigation in Drive group

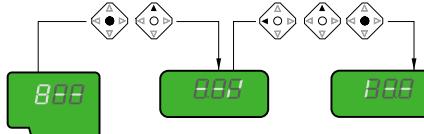


- 1 000
- 2 000
- 3 000
- 4 005
- 5 000

- The first code "00" displayed.
- Press up(▲) key once to move to next code.
- The second code "ACC" appears.
- Press up(▲) key once to move to next code.
- The third code "DEC" is shown.
- To move to the last code press up(▲) key until "dC" appears.
- Press up(▲) key once more to return to the first code.
- To move in reverse order use down(▼) key.

Procedure to set command frequency in Drive group

To input new command frequency 30.05[Hz] from 0.0 set in the factory



- 1 000
 - 2 000
 - 3 000
 - 4 005
 - 5 005
 - 6 005
 - 7 000
 - 8 300
 - 9 300
- The first code "0.0" displayed.
 - Press pro/ent(■) key.
 - The digit of the first decimal place can be changed.
 - Press right(⇨) key.
 - The digit of the second decimal place can be changed.
 - Press up(▲) key until the digit becomes 5.
 - Press left(⇦) key.
 - The left digit can be set.
 - Press left(⇦) key.
 - Press left(⇦) key.
 - Though 00.0 is displayed, the actual value remains at 0.05.
 - Make 3 by pressing up(▲) key.
 - Press pro/ent(■) key.
 - 30.0 is flickering.
 - Press pro/ent(■) key to stop the flickering.
 - Command frequency 30.0 is stored.

Note : (1) The LCD on the keypad of Drive IC5 displays only 3 digits.

Use the shift keys (⇨ ⇧) to monitor and set the parameters.

(2) To cancel the parameter setting press the shift keys
(⇨ or ⇧) while 30.0 is flickering in the procedure no. 8.



Program parameters descriptions

Drive group	Keypad display	Description	Setting range	Factory default	Adjustable during run
	0.00	Output frequency : during run Reference frequency : during stop	0 to Max. frequency[Hz]	0.00	Yes
	ACC	Acceleration time	0 to 6000 [sec]	5	Yes
	DEC	Deceleration time	0 to 6000 [sec]	5	Yes
	Drv	Drive mode	0[Keypad] 1[Rx/Rx-1] 2[Rx/Rx-2] 3[ModBus]	1	No
	Freq	Frequency mode	0[Keypad-1] 1[Keypad-2] 2[Volume] 3[V1] 4[] 5[Volume+1] 6[V1+] 7[Volume+V1] 8[ModBus]	0	No
	S11	Step frequency 1	0 to Max. frequency[Hz]	10.00	Yes
	S12	Step frequency 2	0 to Max. frequency[Hz]	20.00	Yes
	S13	Step frequency 3	0 to Max. frequency[Hz]	30.00	Yes
	Cur	Output current	*[A]	*	*
	RPM	Motor speed	*[rpm]	*	*
	DCL	DC voltage	*[V]	*	*
	vOL/P0/r0r	User display selection	*	*	*
	nOn	Fault display	*	*	*
	drC	Motor direction set	F[Forward] R[Reverse]	F	Yes
FU1 group	FU1	Function Group 1 selection	*	Yes	
	FU2	Function Group 2 selection	*	Yes	
	I/O	I/O Group selection	*	Yes	
	F0	Jump to desired code #	1 to 60 0[None]	1	Yes
	F3	Run prevention	1[Forward disable] 2[Reverse disable]	0	No
	F5	Acceleration pattern	0[Linear] 1[S-curve]	0	No
	F6	Deceleration pattern	0[Linear] 1[S-curve]	0	No
	F7	Stop mode	0[Decel] 1[Dc-brake] 2[Free-run]	0	No
	F8	DC injection braking frequency	F23 to 60[Hz]	5	No
	F9	DC injection braking ON-delay	0 to 60 [sec]	0.1	No
	F10	DC injection braking voltage	0 to 200 [%]	50	No
	F11	DC injection braking time	0 to 60 [sec]	1	No
	F12	Starting DC injection braking voltage	0 to 200 [%]	50	No
	F13	Starting DC injection braking time	0 to 60 [sec]	0	No
	F14	Motor exciting time	0 to 60 [sec]	1	No
	F20	Jog frequency	0 to 400 [Hz]	10	No
	F21	Maximum frequency	40 to 400 [Hz]	60	No
	F22	Base frequency	30 to Max. frequency[Hz]	60	No
	F23	Starting frequency	0 to 10 [Hz]	0.1	No
	F24	Frequency limit selection	0[No], 1[Yes]	0	No
	F25	Frequency limit - high	0 to High limit [Hz]	60	No
	F26	Frequency limit - low	Low limit to Max. frequency[Hz]	0.5	No
	F27	Manual/Auto torque boost selection	0[Manual], 1[Auto]	0	No
	F28	Torque boost in forward direction	0.0 to 150[%]	5	No
	F29	Torque boost in reverse direction	0.0 to 150[%]	5	No
	F30	Volts/Hz pattern	1[Square] 2[User V/F]	0	No



Program parameters descriptions

FU1 group	Keypad display	Description	Setting range	Factory default	Adjustable during run
	F31	User V/F- frequency 1	0 to F33[Hz]	15	No
	F32	User V/F- voltage 1	0 to 100[%]	25	No
	F33	User V/F- frequency 2	F31 to F35[Hz]	30	No
	F34	User V/F- voltage 2	0 to 100[%]	50	No
	F35	User V/F- frequency 3	F33 to F37[Hz]	45	No
	F36	User V/F- voltage 3	0 to 100[%]	75	No
	F37	User V/F- frequency 4	F35 to Maximum frequency[Hz]	60	No
	F38	User V/F- voltage 4	0 to 100[%]	100	No
	F39	Output voltage adjustment	40.0 to 110.0[%]	100	No
	F40	Energy save	0 to 30[%]	0	Yes
	F50	Electronic thermal selection	0[No], 1[Yes]	0	Yes
	F51	Electronic thermal level-1 min.	F52 to 200[%]	150	Yes
	F52	Electronic thermal level-continuous	50 to F51[%]	100	Yes
	F53	Motor cooling system	0[self cool] 1[forced cool]	0	Yes
	F54	Overload alarm level	30 to 150[%]	150	Yes
	F55	Overload alarm hold time	0 to 30[sec]	10	Yes
	F56	Overload trip selection	0[No], 1[Yes]	1	Yes
	F57	Overload trip level	30 to 200[%]	180	Yes
	F58	Overload trip delay time	0 to 60[sec]	60	Yes
	F59	Stall prevention mode selection	Bit 0: During accel. Bit 1: During steady speed Bit 2: During decel.	000	No
	F60	Stall prevention level	30 to 150[%]	150	No
FU2 group	H1	Previous fault history 1	nOn	*	
	H2	Previous fault history 2	nOn	*	
	H3	Previous fault history 3	nOn	*	
	H4	Previous fault history 4	nOn	*	
	H5	Previous fault history 5	nOn	*	
	H6	Delete fault history	0[No], 1[Yes]	0	Yes
	H7	Dwell frequency	0 to Max. frequency[Hz]	5	No
	H8	Dwell time	0 to 10[sec]	0	No
	H10	Selection of jump frequency	0[No], 1[Yes]	0	No
	H11	Jump frequency 1, low	0 to H12[Hz]	10	No
	H12	Jump frequency 1, high	H11 to Maximum frequency[Hz]	15	No
	H13	Jump frequency 2, low	0 to H14[Hz]	20	No
	H14	Jump frequency 2, high	H13 to Maximum frequency[Hz]	25	No
	H15	Jump frequency 3, low	0 to H16[Hz]	30	No
	H16	Jump frequency 3, high	H15 to Maximum frequency[Hz]	35	No
	H17	Inclination at the beginning of S curve	1 to 100[%]	40	No
	H18	Inclination at the end of S curve	1 to 100[%]	40	No
	H19	Output phase loss protection	0[No], 1[Yes]	0	Yes
	H20	Power ON start selection	0[No], 1[Yes]	0	Yes
	H21	Restart after fault reset	0[No], 1[Yes]	0	Yes
	H22	Speed search selection	0000 to 1111[bit set] Bit 0: During accel. Bit 1: After fault reset Bit 2: Restarted after instant power failure Bit 3: When H20 is set to 1[Yes]	0	No
	H23	Speed search current limitation level	8 to 200[%]	100	Yes
	H24	Speed search P gain	0 to 9999	100	Yes
	H25	Speed search I gain	0 to 9999	1000	Yes
	H26	Number of auto restart attempt	0 to 10	0	Yes
	H27	Delay time before auto restart	0 to 60[sec]	1	Yes
	H30	Motor power rating selection	0.2, 0.75, 1.5, 2.2[kW]	*	No
	H31	Number of motor poles	2 to 12	4	No
	H32	Rated motor slip	0 to 10[%]	*	No
	H33	Rated motor current in RMS	0 to 20[A]	*	No
	H34	No load motor current in RMS	0.1 to 20[A]	*	No
	H36	Motor efficiency	70 to 100[%]	*	No



Program parameters descriptions

RJ2 group	Keypad display	Description	Setting range	Factory default	Adjustable during run
	H37	Load inertia	0 to 2	0	No
	H39	Carrier frequency	1 to 15[kHz] 0[V/F]	3.0	Yes
	H40	Control mode selection	1(Slip compen) 2(PID) 3(Sensorless vector control)	0	No
	H41	Auto tuning	0 to 1	0	Yes
	H42	Stator resistance	0 to 5 [Ω]	0	Yes
	H44	Leakage inductance	0 to 300[mH]	0	Yes
	H45	Sensorless P gain	0 to 32767	1000	Yes
	H46	Sensorless I gain	0 to 32767	100	Yes
	H50	PiP feedback signal selection	0[] 1[V]	0	No
	H51	P gain for PID control	0 to 999.9[%]	300	Yes
	H52	I gain for PID control	0.1 to 32.0[sec]	1	Yes
	H53	D gain for PID control	0.1 to 30.0[sec]	0	Yes
	H54	F gain for PID control	0 to 999.9[%]	0	Yes
	H55	Limit frequency for PID control	0 to Max. frequency[Hz]	60	Yes
	H70	Reference frequency for Accel/Decel	0[Max freq.] 1(Delta freq.) 0.0001[sec]	0	Yes
	H71	Accel/Decel time scale	1[0.01sec] 2[sec]	1	No
	H72	Power On display	0(Command frequency) 1(Accel. Time) 2(Decel. Time) 3(Drive mode) 4(Frequency mode) 5(Step frequency 1) 6(Step frequency 2) 7(Step frequency 3) 8(Current) 9(Speed) 10(DC link voltage) 11(User display) 12(Fault display) 13(Motor direction) 0(Voltage)	0	Yes
	H73	User display selection	1(Watt) 2(Torque)	0	Yes
	H74	Gain for motor speed display	1 to 1000[%]	100	Yes
	H79	Software version	xxx	xxx	*
	H81	2nd acceleration time	0 to 6000 [sec]	5	Yes
	H82	2nd deceleration time	0 to 6000 [sec]	10	Yes
	H83	2nd acceleration time	30 to Max. frequency[Hz]	60	No
	H84	2nd V/F pattern	1(Square) 2(User V/F)	0	No
	H85	2nd forward torque boost	0.0 to 15.0[%]	5	No
	H86	2nd reverse torque boost	0.0 to 15.0[%]	5	No
	H87	2nd stall prevention level	30 to 150[%]	150	No
	H88	2nd electronic thermal level-1 min.	H89 to 200[%]	150	Yes
	H89	2nd electronic thermal level-continuous	50 to H88[%]	100	Yes
	H90	2nd motor rated current	0.1 to 20[A]	*	No
	H93	Parameter initializing	0(No) 1(All groups) 2(Drive) 3(Function 1) 4(Function 2) 5(I/O)	0	No
	H94	Parameter writing protection	0 to FFF	0	Yes
	H95	Parameter change protection	0 to FFF	0	Yes



Program parameters descriptions

I/O group	Keypad display	Description	Setting range	Factory default	Adjustable during run
I1		Filtering time constant for V0 signal input	0 to 9.999[msec]	10	Yes
I2		V0 input minimum voltage	0 to 10V	0	Yes
I3		Frequency corresponding to I2	0 to 400 [Hz]	0.0	Yes
I4		V0 input maximum voltage	0 to 10V	10	Yes
I5		Frequency corresponding to I4	0 to 400 [Hz]	60.0	Yes
I6		Filtering time constant for V1 signal input	0 to 9.999[msec]	10	Yes
I7		V1 input minimum voltage	0 to 10V	0	Yes
I8		Frequency corresponding to I7	0 to Max. frequency[Hz]	0.0	Yes
I9		V1 input maximum voltage	0 to 10V	10	Yes
I10		Frequency corresponding to I9	0 to Max. frequency[Hz]	60.0	Yes
I11		Filtering time constant for I signal input	0 to 9.999[msec]	100	Yes
I12		I input minimum current	0 to 20[mA]	4	Yes
I13		Frequency corresponding to I12	0 to Max. frequency[Hz]	0	Yes
I14		I input maximum current	I12 to 20[mA]	20	Yes
I15		Frequency corresponding to I14	0 to Max. frequency[Hz]	60.0	Yes
I16		Criteria for analog speed signal loss	0(None) 1(Half of x1) 2(Below x1) 0(FX) 1(RX) 2(BX) 3(RST) 4(JOG) 5(Speed-L) 6(Speed-M) 7(Speed-H) 8(XCEL-L) 9(XCEL-M) 10(XCEL-H) 11(DC-brake) (- reserved -)	0	Yes
I20		Definition of multifunction input terminal P18, 9, 15, 20, 21, 22, 23, 24, 25, 26	12(2nd function) 15(Up) 16(Down) 17(3 wire) 18(EXT-A) 19(EXT-B) 21(Open-loop) 22(Main drive) 23(Analog hold) 24(XCEL-stop)	0	Yes
I21		Definition of multifunction input terminal P2	Same as above I20	1	Yes
I22		Definition of multifunction input terminal P3	Same as above I20	2	Yes
I23		Definition of multifunction input terminal P4	Same as above I20	1	Yes
I24		Definition of multifunction input terminal P5	Same as above I20	2	Yes
I25		Terminal input status	00000-11111 [bit]	*	*
I26		Terminal output status	00-11 [bit]	*	*
I27		Filtering time constant for multifunction input terminal	0 to Max. frequency[Hz]	15	Yes
I30		Step frequency 4	0 to Max. frequency[Hz]	30	Yes
I31		Step frequency 5	0 to Max. frequency[Hz]	25	Yes
I32		Step frequency 6	0 to Max. frequency[Hz]	20	Yes
I33		Step frequency 7	0 to Max. frequency[Hz]	15	Yes
I34		Acceleration time 1	0 to 600 [sec]	3	Yes
I35		Deceleration time 1	0 to 600 [sec]	3	Yes
I36		Acceleration time 2	0 to 600 [sec]	4	Yes
I37		Deceleration time 2	0 to 600 [sec]	4	Yes
I38		Acceleration time 3	0 to 600 [sec]	5	Yes
I39		Deceleration time 3	0 to 600 [sec]	5	Yes
I40		Acceleration time 4	0 to 600 [sec]	6	Yes
I41		Deceleration time 4	0 to 600 [sec]	6	Yes
I42		Acceleration time 5	0 to 600 [sec]	7	Yes
I43		Deceleration time 5	0 to 600 [sec]	7	Yes

Program parameters descriptions



FU2 group	Keypad display	Description	Setting range	Factory default	Adjustable during run
	I44	Acceleration time 6	0 to 600 [sec]	8	Yes
	I45	Deceleration time 6	0 to 600 [sec]	8	Yes
	I46	Acceleration time 7	0 to 600 [sec]	9	Yes
	I47	Deceleration time 7	0 to 600 [sec]	9	Yes
	I50	AM output	0(frequency) 1(Current) 2(Voltage) 3(DC link voltage)	0	Yes
	I51	AM output adjustment	100 to 200[%]	100	Yes
	I52	Frequency detection level	0 to Max. frequency[Hz]	30	Yes
	I53	Frequency detection bandwidth	0 to Max. frequency[Hz]	10	Yes
	I54	Definition of multifunction output terminal M0	0(FDT-1) 1(FDT-2) 2(FDT-3) 3(FDT-4) 4(FDT-5) 5(IOL) 6(IOL) 7(Stall) 8(OV) 9(LV) 10(OH) 11(Lost command) 12(Run) 13(Stop) 14(Steady) 15(Search) 16(Ready) 17(Fault select)	12	Yes
	I55	Definition of relay functions	Same as above I54 000 to 111 [bit set]	12	Yes
	I56	Fault relay setting (30A, 30B, 30C)	Bit 0 : Low voltage Bit 1 : Trip Bit 2 : Number of auto retry	010	Yes
	I60	Inverter number	1 to 32	1	Yes
	I61	Baud rate	0(1200bps) 1(2400bps) 2(4800bps) 3(9600bps) 4(19200bps) 0(lane)	3	Yes
	I62	Operating selection at loss of freq. reference	1(free run) 2(stop)	3	Yes
	I63	Waiting time after loss of freq. reference	0.1 to 12[sec]	10	Yes

Checking & Troubleshooting



Warning :

If protection function activates due to error/fault in the inverter, corresponding alarm is displayed on the keypad as shown below. Correct the error/fault before restarting or it may decrease the inverter's life expectancy.



Display	Fault/Error	Description
GCE	Overcurrent	Output current has been greater than 200% of the rated current. The inverter output is interrupted.
GFE	Ground fault	Ground fault has been occurred at the load side of the inverter. The inverter output is interrupted.
IOL	Inverter overload	Output current greater than 150% of the rated current has been flowed over 1 min. The inverter output is interrupted.
OLE	Overload trip	Output current has been greater than the set value (F57) of the rated current. The inverter output is interrupted.
OHE	Coolingpin overheated	Cooling pin has been overheated due to high ambient temperature. The inverter output is interrupted.
COL	DC link condenser overload	If the DC condenser of Inverter is in need of replacement the inverter output is interrupted.
PDE	Output phase loss	One or more of output line U, V and W lost. The inverter output is interrupted.
OVE	Oversupply	The inverter main voltage has been risen above the permissible limit 400V. Check if deceleration time has been set too short or line input voltage is too high.
UL	Undervoltage	The inverter output is interrupted.
EER	Electronic thermal	The inverter output is interrupted according to the set time-inverse curve to prevent the overtemperature of the motor due to overloads.
EEP	Parameter store error	Error has been occurred on the storing of the changed parameters. It is displayed when power is on.
HWE	Hardware error	It is displayed in case of software error. It is not possible to reset by STOP/RST key on the keypad or reset terminals. Open the inverter power and make sure the keypad power is off and close the power again.
ERR	Communication error	Communication error between controller and keypad. It is not possible to reset by STOP/RST key on the keypad or reset terminals. Open the inverter power and make sure the keypad power is off and close the power again.
FBN	Coolingfan error	Error has been occurred on the coolingfan. The inverter output is interrupted in the case that BX terminal is ON.
ESE	Output instant interrupting	 Warning : To restart the drive make BX terminal OFF during the FX / RX is ON.
SEI	A contact fault signal input	If I20/21/22/23/24 set to 18 is ON, the inverter output is interrupted.
SEB	B contact fault signal input	If I20/21/22/23/24 set to 19 is ON, the inverter output is interrupted.
SCS	Frequency command loss	If signal input is failed for the driving by using analog input or option(RS485), try to drive according to the setting at I62.

Checking & Troubleshooting



Fault/Error	Possible cause	Solution
BCE Overcurrent	<p></p> <p>Accel/Decel time is not enough for the load inertia (GD) Increase the Accel/Decel time.</p> <p>The load is greater than the rating of the inverter.</p> <p>Inverter output is assigned during the free run of the motor.</p> <p>The motor brake operates too fast.</p>	<p>Replace the inverter with a higher rating</p> <p>Operate after the motor stops or use speed search(H22) in FU2 in the output terminals.</p> <p>Verify the output wiring</p> <p>Verify the mechanical brake.</p>
GFE Ground fault	<p>Ground fault at the load side of the inverter.</p> <p>Insulation of the motor is broken.</p>	<p>Check to see if there is something wrong with output wiring.</p> <p>Replace a motor.</p>
IBL Inverter overload	<p>The load is greater than the rating of the inverter.</p> <p>Power rating is set to the lower value than the load</p>	<p>Increase the ratings of a motor and an inverter.</p> <p>Check to see if the setting is correct.</p>
OLE Overload trip	Torque boost is too great.	Reduce the torque boost.
BHE Cooling fan overheated	<p>Fault in the cooling system.</p> <p>The cooling fan is used beyond the life expectancy.</p> <p>High ambient temperature</p>	<p>Check to see if there is any alien substance in the ventilation system.</p> <p>Replace the cooling fan.</p> <p>Keep the ambient temperature below 40°...</p>
PBE Output phase loss	<p>Fault in the load side contactor</p> <p>Wiring problem</p>	<p>Replace the contactor.</p> <p>Verify the output wiring</p>
FRn Cooling fan error	<p>Alien substances are in the ventilator.</p> <p>The cooling fan is used beyond the expectancy.</p>	<p>Check to see if there is any alien substance in the ventilation system.</p> <p>Replace the cooling fan.</p>
BUE Overvoltage	<p>Decel time is not enough for the load inertia(GD)</p> <p>There is a survived load in the load side.</p> <p>Higher voltage than rating is supplied.</p>	<p>Increase the Decel time</p> <p>Use D8 unit.</p> <p>Verify the power voltage.</p>
LUL Undervoltage	<p>Lower voltage than rating is supplied.</p> <p>Power capacity is not enough for the additional loads like welders and direct-on-line starting motors.</p> <p>Fault in the line side contactor</p>	<p>Verify the power voltage.</p> <p>Increase the power capacity.</p> <p>Replace the contactor.</p>
EER Electronic thermal	<p>Overttemperature of the motor</p> <p>The load is greater than the rating of the inverter.</p> <p>Electronic thermal level is set lower than rating.</p> <p>Inverter power rating is set to the lower value than the load</p> <p>Long operation at low speed.</p>	<p>Reduce the load or operation times.</p> <p>Increase the ratings of the inverter.</p> <p>Adjust the electronic thermal properly.</p> <p>Adjust the inverter rating properly.</p> <p>Replace the motor with the separated power cable for the cooling fan.</p>
4ER A contact fault signal input		
4EB B contact fault signal input	The terminal I20/21/22/23/24 set to 18/19 is ON	Verify the circuits connected to the external fault terminals.
EFU Frequency command loss	Frequency command loss at terminals V1 and I	Verify the wiring connected to V1 and I terminals.
ERR Parameter store error		
HIE Output instant interrupting		Refer to LG or distributors
ERR Communication error		

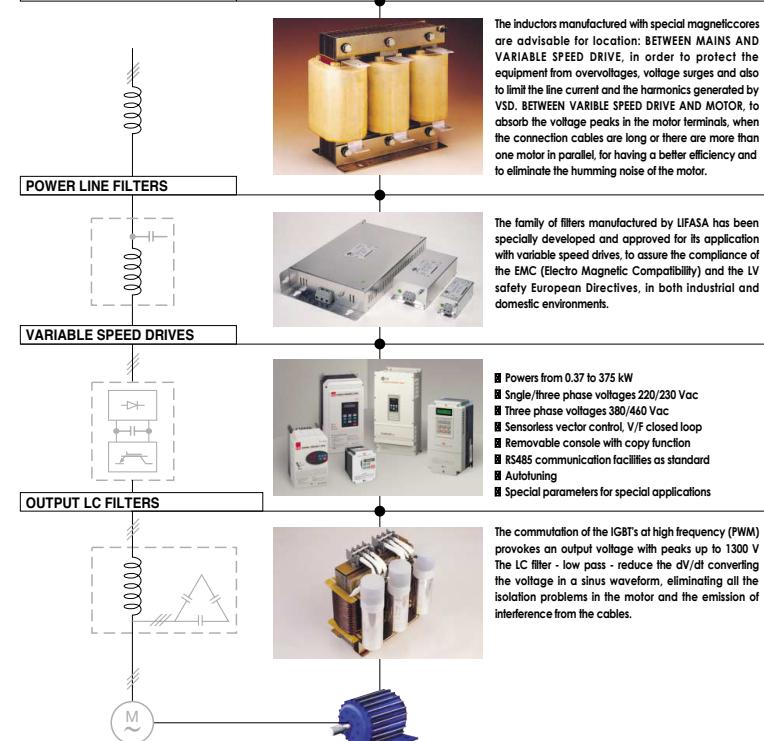
Tips on Installation



Warning :

Carefully read the instruction for installation and wiring of inverters and relevant devices. Normal operation is impossible in case of the improper system design and wiring. These can shorten the life of the inverter and damage it at the worst.

INDUCTORS FOR VARIABLE SPEED DRIVES



Filter for use of LG Inverters :

Leader in Electrics & Automation**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.

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