

DeviceNet Option Board for SV-iS5 Series

Read this manual carefully before using the DeviceNet Option Board and follow the instructions exactly. After reading this manual, keep it at handy for future reference.



LG Industrial Systems

Thank you for purchase of LG DeviceNet Option Board!

SAFETY PRECAUTIONS

- Always follow safety precautions to prevent accidents and potential hazards from occurring.
- Safety precautions are classified into “WARNING” and “CAUTION” in this manual.



WARNING

Indicates a potentially hazardous situation which, if not avoided, can result in serious injury



CAUTION

Indicates a potentially hazardous situation which, if not avoided, can result in minor to moderate injury, or serious damage to the product.

- Throughout this manual we use the following two illustrations to make you aware of safety considerations:



Identifies potential hazards under certain conditions.
Read the message and follow the instructions carefully.



Identifies shock hazards under certain conditions.
Particular attention should be directed because dangerous voltage may be present.

- Keep this manual at handy for quick reference.



CAUTION

- **Be sure to take ESD (Electrostatic Discharge) protection measures when you touch the board.**
Otherwise, the option board may get damaged due to static charges.
- **Implement wiring change on the Option Board after checking that the power supply is off.**

Otherwise, there is a danger of connecting error and damage to the board.

- **Be sure to fix inverter to option board tightly.**

Otherwise, there is a danger of connecting error and damage to the board.

- **Be sure to install a termination resistor (120ohm, 1/4W) at the end of the network.**

- **Be sure to check parameter unit when setting parameters.**

Otherwise, there is a danger of connecting error.

CHAPTER 1 - INTRODUCTION

By using a DeviceNet communication board, SV-iS5 inverter can be connected to a DeviceNet network.

1.1. Through LG DeviceNet Option Board...

- Inverter can be controlled and monitored by PLC sequence program or any Master Module.
- Multiple inverters can be connected to one communication cable with simple and easy installation, dramatically saving wiring, maintenance cost and time.
- Compatible with PC System, PLC and any controllers is available, making Factory Automation more easily.

1.1.1. Vocabulary

In this manual we refer to the:

- DeviceNet Option Board for iS5 series as **the Option Board**
- iS5 series inverter as **the inverter**

1.2. Kit Contents

The DeviceNet option board kit consists of:

- DeviceNet Option Board, 1 pcs
- 5 pin Connector, 1 pcs
- Mounting poles, 3 pcs
- Installation Manual

1.3. DeviceNet Option Board Specification

- Device Type: AC Drives
- Explicit Peer to Peer Messaging: Support
- I/O Peer to Peer Messaging: N/A (Not Available)
- Configuration Consistency Value: N/A
- Faulted Node Recovery (Off-Line): Support

- Baud Rate Support: 125, 250, 500 (kbps)
- Master/Scanner (Predefined M/S Connection): Support
- I/O Slave Messaging
 - Polling: Support
 - Bit Strobe, Cyclic, COS (Change of State): N/A
- Range of Input Voltages: 11 – 25V DC

1.4. Installing the Communication Card

1.4.1. Board Layout

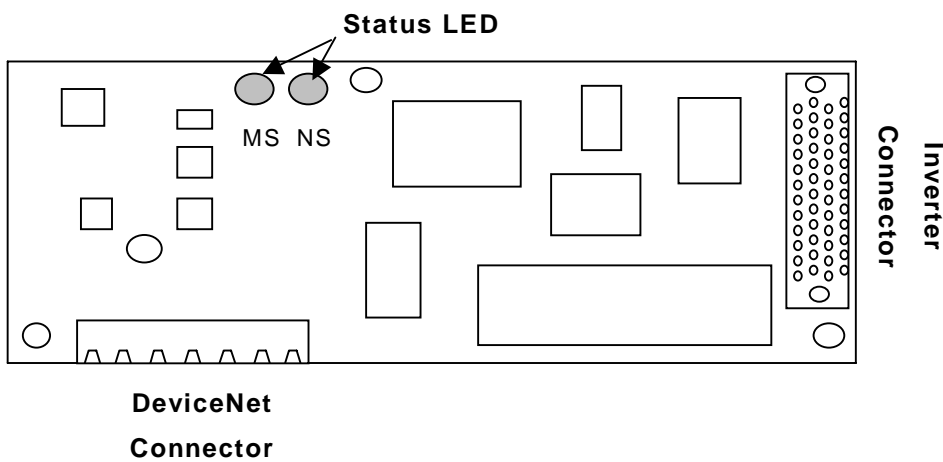


Figure 1 – Board layout

1.4.2. Status LED

MS (Module Status) LED	Checks the status of incoming power to option board, CPU function and communication to the Inverter.
NS (Network Status) LED	Checks the connection of option card on the Network and DeviceNet power status.

Note) Refer to **Chapter 4 - TROUBLESHOOTING** for more details.

1.4.3. DeviceNet Connection Terminal

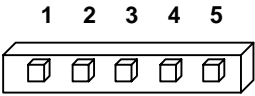
DeviceNet Terminal Block	Terminal	Signal	Function	Cable Color
	1	Common	Common	Black
	2	CAN Low	Signal Low	Blue
	3	Shield	Shield	Bare
	4	CAN High	Signal High	White
	5	V+	Power supply (11-24VDC)	Red

Figure 2 – DeviceNet Terminal Block

CHAPTER 2 - INSTALLING THE OPTION BOARD

2.1. Installing the Option Board to the Inverter

Note) DeviceNet Option Board can be installed to the inverter having software V 1.05 and later.

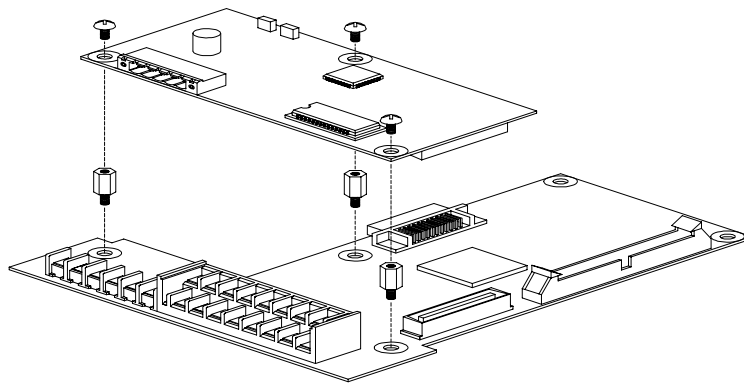


Figure 3 – Installing the DeviceNet Board to the Inverter

2.1.1. Setting the DeviceNet Parameter

2.1.1.1. Setting the MAC ID <COM Group, #10>

1. MAC ID (Media Access Control Identifier, Station Number) is a unique value to identify nodes in the DeviceNet Network. When setting, you must ensure that the each serial device on the network has a unique address.
2. Setting and changing MAC ID is available via keypad.
3. The factory default setting is DeviceNet address 63. If DPRAM communication between Inverter and the Option card becomes faulty, the value will default to Station Number 63.

	Min Value	Max Value	Parameter Setting
MAC ID	0	63	COM Group, #10

- When MAC ID is changed during Run, Option board is automatically reset to find the device new MAC ID is allocated on the network. If a duplicate Mac ID is checked, NS (Network Status) LED turns Solid Red. In this case, it should be changed to different MAC ID. In the normal operation, LED color is flashing Green.

2.1.1.2. Setting the Baud Rate < COM Group, #11>

Baud Rate	Trunk Cable Length		Drop Length	
	Thick Cable	Thin Cable	Max Length	Total
125 kbps	500 m (1640 ft.)	100 m (328 ft.)	6 m (20 ft.)	156 m (512 ft.)
250 kbps	250 m (820 ft.)			78 m (256 ft.)
500 kbps	100 m (328 ft.)			39m (128ft.)

Table 1 – Baud Rate vs. Cable Length

- The Baud Rate determines the maximum length of the DeviceNet cable. Refer to Table 1 to determine cable lengths and baud rates. The above is only met when DeviceNet-dedicated cables are used. For more information on the DeviceNet cables, makers and detail specifications, refer to the Open DeviceNet Vendor Association (ODVA) homepage at "<http://www.odva.org/>".
- NS LED remains OFF when the setting of actual Network communication speed and Baud Rate does not match.
- Set the desirable Baud Rate via Keypad. Changing this parameter does not change the actual data rate until power is cycled. Reset the inverter or request Reset

Service to the Inverter Reset Identity Object.

4. NS LED will turn to flashing Green when Network Baud Rate matches Baud Rate of the option card and a unique MAC ID is allocated.

2.1.1.3. Setting Assembly Instance

Assembly Instance has four types of Sending/Receiving data through Poll I/O communication. Refer to **Assembly Object** in **Chapter 7** for detailed information.

2.2. Setting Other Parameters

2.2.1. Setting Option Mode [COM Group, #02]

Via DeviceNet	COM Group, #02 setting
Issuing Operating command only	Command
Issuing Frequency command only	Freq
Issuing Operating + Frequency command	Cmd+Freq

Table 2 – Setting Option Mode

Note) This setting supercedes setting in FU1 group.

2.2.2. Setting TimeOut [I/O, #49]

The factory default setting for TimeOut is 1 sec. When communication between inverter and DeviceNet network is disrupted in the Run mode, inverter checks the communication failure and performs operation under the setting in I/O group #48 until Master-setting Time + preset TimeOut elapses.

2.3. Poll I/O Connection

It is a Data transaction between Inverter and Scanner.

- Input/output size: 4 bytes
- Communication Rate: 0 (default)
- Data Transaction: Poll I/O

Data transaction thru Poll I/O is determined by the setting of Assembly Instance [COM, #12,13].

Assembly Instance consists of Input and Output, based on Scanner side. Therefore, Input Data means data Scanner receives. For inverter side, it is the feedback value to Scanner.

By contrast, Output Data is the data Scanner transmits to the Inverter as a new command.

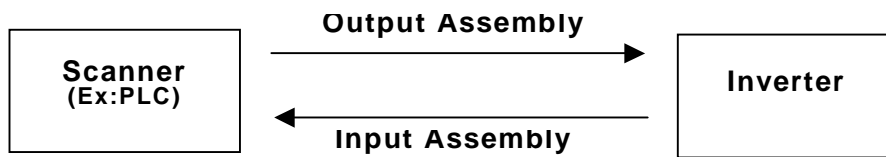


Figure 4 - Data Transaction via Poll I/O Communication

	Scanner Side	Inverter Side
Input Assembly Data	Receive data	Transmit data
Output Assembly Data	Transmit data	Receive data

CHAPTER 3 - MODES OF OPERATION

3.1. PowerUp Reset mode

During a powerup or reset, the option board:

1. Performs powerup initialization. First Module Status LED flashes Green for 0.25sec to Red for 0.25sec and then turns to Solid Green when DPRAM is in normal operation.
2. Then, Network Status LED flashes Green for 0.25sec to Red for 0.25sec
3. After no duplicate MAC ID is detected, Network Status LED flashes Green, indicating the option board is successfully connected to the Network. However, communication with other nodes has not been initiated.

If the above steps is failed, follow the below steps. No action is required in the normal operating state.

1. When DPRAM is not working properly, Module Status LED turns Solid Red. In this case, Check the option board's connection with Inverter first and cycle the power.
 2. When NS remains OFF, not flashing Green,
 - 1) Check the DeviceNet Power
 - 2) Check the Baud Rate of Network and the Option board matches.
- When duplicate MAC ID error occurs, Network Status LED turns Solid Red. In this case, allocate the different MAC ID via Keypad.
 - When the option board is in communication with other nodes, NS (Network Status) LED turns Solid Green.

3.2. When EMC (Explicit Message Connection) is established by Scanner

- Network Status LED turns green. During this state, if EMC setting is deactivated, the LED will turn green after 10 seconds delay. Once EMC is connected, I/O Connection setting is available. At this time, the Network Status LED will not change.

- If I/O Connection is not established within given time, then Time Out will occur and Network Status LED turns flashing Red. (Depending on the time setting of EMC, the status can be changed to green again.)

CHAPTER 4 - TROUBLESHOOTING

The current status of Device and Network can be monitored through built-in LED (MS, NS).

[NS (Network Status) LED]

LED	Status	Cause	Diagnostics
OFF	Off-Line (No Power)	The option card is not receiving power from the Network.	Check DeviceNet power and cable connections and the power connection on the DeviceNet terminal block.
		Single node on the network	Check DeviceNet Master node operation for correct Communication.
		Incorrect Baud Rate is set.	Change the baud rate setting and reset the inverter.
Flashing Green	On-Line, Not Connected	Communication is set after duplicate node check is finished, but connection to other node is not completed.	Normal operating status before user makes connection.
Solid Green	On-Line, Connected (Link OK)	More than one EMC connection is established.	Polled I/O connection is available.
Flashing Red	Connection Time-Out Critical Link Failure.	Polled I/O connection is Timed Out	Inverter Reset. Request Reset Service to the Inverter Reset Identity Object. Retry I/O connection.
Solid Red	Faults occurred	Duplicate MAC ID check failed	Change the setting of MAC ID.
		Bus Off State	Check for line connection
Green→ Flashing Red	Self- diagnostic	Device is under self-diagnostic mode.	Wait for a moment.

Red → Flashing Green	Communication Fault	State of Communication Fault due to the failure to pass the Network Access. Identity communication Fault Request is accepted	No action required.
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[MS (Module Status) LED]

LED	Status	Cause	Diagnostics
Off	No Power	5V Power is not applied to the option card.	Check the incoming power to inverter is provided. Check 5V power is ON.
Solid Green	Operational	Normal operation state	
Solid Red	Unrecoverable Fault	Data transaction through DPRAM is disrupted..	Check the connection between option card and Inverter.
Flashing Green & Red	Self Test	Device is in self-test mode.	

1. EDS(Electronic Data Sheet)

EDS files are specially formatted ASCII files that provide all of the information necessary for a configuration tool such as the DeviceNet Manager, to access and alter the parameters of a device. The EDS file contains information on the number of parameters in a device and how those parameters are grouped together. Information about each parameter is contained in this file such as parameter min, max, and default values, parameter data format and scaling and the parameter name and units. Install EDS files for iS5 to control iS5 parameters using DeviceNet Manager program. This file can be downloaded from : <http://www.lgis.com> or contact your LG representative.

CHAPTER 5 - DEVICENET DATA TABLES

■ Message

- R: Read Only
- R/W: Read / Write enable

<Device Profile>

- AC/DC Drives: 0x 02

<Object Model>

Object Class Name	Class Code
Identity Object	0x01
Message Router	0x02
DeviceNet	0x03
Assembly	0x04
Connection	0x05
Motor Data	0x28
Control Supervisor	0x29
AC/DC Drive	0x2A
Inverter	0x64

< Class 1 - Identity Object>

Class Code	0x01
Instance	1 (All attributes are instance 1)

Attribute ID	Attribute Name	Access Method
1	Vendor ID	R
2	Device Type	R
3	Product Code	R
4	Revision	R
	Major Revision (High Byte)	
	Minor Revision (Low Byte)	

Attribute ID	Attribute Name	Access Method
5	Status ¹	R
6	Serial Number	R
7	Product Name	R

Service Name	Service Code	Implemented for:	
		Class	Instance
Get_Attribute_Single	0x0E	No	Yes
Reset	0x05	No	Yes
Set_Attribute_Single	0x10	No	Yes

< Class 3 - DeviceNet Object >

Class Code	0x03
Instance	1 (All attributes are instance 1)

Attribute ID	Attribute Name	Access Method
1	MAC ID ²	R/W
2	Baud Rate ³	R/W
3	BOI	Not support
4	Bus-Off Counter	Not support

¹ Status Attribute

Bit number	0 (Owned)	8 (Recoverable Minor Fault)	Other Bits
Meaning	Connected to the master	DPRAM Error	Not support

² Range of Mac ID: 0 to 63

³ Baud Rate

Value	0	1	2
Baud Rate	125 kbps	250 kbps	500 kbps

Attribute ID	Attribute Name	Access Method
5	Allocation Information: Allocation Choice Byte ⁴ Master's MAC ID	R
6	MAC ID Switch Changed	R
7	Baud Rate Changed	Not support
8	MAC ID Switch Value	Not support
9	Baud Rate Switch Value	Not support

Service Name	Service Code	Implemented for:	
		Class	Instance
Get_Attribute_Single	0x0E	Yes	Yes
Set_Attribute_Single	0x10	No	Yes
Allocate Master/Slave Connection Set	0x4B	No	Yes
Release Group2 Identifier Set	0x4C	No	Yes

< Class 4 - Assembly Object >

Class Code	0x04
Instance	1 (All attributes are instance 1)

Service Name	Service Code	Implemented for:	
		Class	Instance
Get_Attribute_Single	0x0E	No	Yes
Set_Attribute_Single	0x10	No	Yes

⁴ Allocation Choice Byte

7	6	5	4	3	2	1	0
Not Supported						Polled	Explicit Message

< Output Assembly Data Attribute Format >

Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
20 (100)	0						Fault Reset		Run Fwd
	1								
	2	Speed Reference (Low Byte) – RPM unit (Speed Reference (Low Byte) – Hz unit)							
	3	Speed Reference (High Byte) – RPM unit (Speed Reference (High Byte) – Hz unit)							
21 (101)	0		NetRef	NetCtrl			Fault Reset	Run Rev	Run Fwd
	1								
	2	Speed Reference (Low Byte) – RPM unit (Speed Reference (Low Byte) – Hz unit)							
	3	Speed Reference (High Byte) – RPM unit (Speed Reference (High Byte) – Hz unit)							

Name	Description	Related Attribute	
		Class	Attr. ID
Run Fwd	Forward Run Command	0x29	3
Run Rev	Reverse Run Command	0x29	4
Fault reset	Fault Reset Command	0x29	12
NetRef ⁵	Not used	0x2A	4
NetCtrl ⁵	Not used	0x29	5
Speed Reference	Speed Command	0x2A	8

⁵ Setting Reference Control and Run/Stop Control can Only be done via LCD Keypad. Therefore, NetRef, NetCtrl in Instance 21 and 101 is not available.

< Input Assembly Data Attribute Format >

Instance	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
70 (110)	0						Run- ning1		Faulted
	1								
	2	Speed Reference (Low Byte) – RPM unit (Speed Reference (Low Byte) – Hz unit)							
	3	Speed Reference (High Byte) – RPM unit (Speed Reference (High Byte) – Hz unit)							
71 (111)	0	At Ref.	Ref from Net	Ctrl from Net	Ready	Run- ning 2, (Rev)	Run- ning 1, (Fwd)	Warn- ing	Faulted
	1								
	2	Speed Reference (Low Byte) – RPM unit (Speed Reference (Low Byte) – Hz unit)							
	3	Speed Reference (High Byte) – RPM unit (Speed Reference (High Byte) – Hz unit)							

Name	Description	Related Attribute	
		Class	Attr. ID
Faulted	DPRAM or Inverter Error	0x29	10
Warning	Not Supported	0x29	11
Running1	Motor is running Forward	0x29	7
Running2	Motor is running Reverse	0x29	8
Ready	Motor is ready to run	0x29	9
Ctrl From Net	Run/Stop control	0x29	15
Ref From Net	Speed control	0x2A	29

At Reference	Reach at Reference Speed	0x2A	3
Drive State	Current Motor State	0x29	6
Speed Actual	Speed Command	0x2A	7

< Class 5 - Connection Object >

Class Code	0x05	
Instance	1	Predefined EMC
	2	Poll I/O
	6, 7, 8, 9, 10	Dynamic EMC

Attribute ID	Attribute Name	Access Method	
		I/O	EMC
		Established/ Timed Out	Established/ Deferred delete
1	State	R	R
2	Instance_type	R	R
3	TransportClass_trigger	R	R
4	Produced_connection_id	R/W	R
5	Consumed_connection_id	R/W	R
6	initial_comm_characteristics	R	R
7	Produced_connection_size	R	R
8	Consumed_connection_size	R	R
9	Expected_packet_rate	R/W	R/W
10 – 11	N/A		
12	Watchdog_timeout_action	R/W	R/W
13	Produced_connection_path_length	R	R
14	Produced_connection_path	R	R
15	Consumed_connection_path_length	R	R
16	Consumed_connection_path	R	R
17	Production_inhibit_time	R/W	R

Service Name	Service Code	Implemented for:	
		Class	Instance
Get_Attribute_Single	0x0E	No	Yes
Reset	0x05	No	Yes
Set_Attribute_Single	0x10	No	Yes

<Class 28 - Motor Data Object >

Class Code	0x28
Instance	1 (All attributes are instance 1)

Attribute ID	Attribute Name	Access Method
3	MotorType	R ⁶
6	RatedCurrent	R/W
7	RatedVoltage	R

Service Name	Service Code	Implemented for:	
		Class	Instance
Get_Attribute_Single	0x0E	No	Yes
Set_Attribute_Single	0x10	No	Yes

< Class 29 - Control Supervisor Object >

Class Code	0x29
Instance	1 (All attributes are instance 1)

Attribute ID	Attribute Name	Access Method
3	Run 1 (Forward command)	R/W
4	Run 2 (Reverse command)	R/W
5	NetCtrl ⁷	R
6	State	R

⁶ MotorType Attribute Squirrel Cage Induction Motor: #7

⁷ NetCtrl Attribute: This Attribute setting determines the control location for the motor. This value only can be set through the keypad for the safety reason. Changing this via DeviceNet does not cause error and cannot affect the setting.

Attribute ID	Attribute Name	Access Method
7	Running1 (Forward running)	R
8	Running2 (Reverse running)	R
9	Ready	R
10	Faulted	R
12	FaultRst	R/W
13	FaultCode	R
15	CtrlFromNet	R

Service Name	Service Code	Implemented for:	
		Class	Instance
Get_Attribute_Single	0x0E	No	Yes
Set_Attribute_Single	0x10	No	Yes

< Class 2A - AC/DC Drive Object >

Class Code	0x2A
Instance	1 (All attributes are instance 1)

Attribute ID	Attribute Name	Access Method
3	AtReference	R
4	NetRef ⁸	R/W
6	DriveMode	R/W
7	SpeedActual	R
8	SpeedRef	R/W
9	CurrentActual	R
29	RefFromNet	R
100	Actual Hz	R
101	Reference Hz	R/W
102	Acc. Time	R/W
103	Dec. Time	R/W

⁸ NetRef Attribute

This setting is only done via Keypad for safety reason. Changing this via DeviceNet does not cause error and cannot affect the setting.

Service Name	Service Code	Implemented for:	
		Class	Instance
Get_Attribute_Single	0x0E	No	Yes
Set_Attribute_Single	0x10	No	Yes

< Class 64 - Inverter Object >

Class Code	0x64		Attribute Number
Instance	1	DRV Group	iS5 Parameter code # + 1
	2	FU1/FU2 Group	Same as iS5 Parameter code #
	3	I/O Group	Same as iS5 Parameter code #
	4	COM Group	Same as iS5 Parameter code #
	5	APP Group	Same as iS5 Parameter code #

Note) Refer to iS5 inverter manual for reference of Attribute Number. It is the same as iS5 Parameter Code Number.

Service Name	Service Code	Implemented for:	
		Class	Instance
Get_Attribute_Single	0x0E	Yes	Yes
Set_Attribute_Single	0x10	No	Yes

CHAPTER 6 - PARAMETER CODE (HEX)

<Common>⁹

Parameter Address	Parameter Name	Unit	Read/Write	Data Value (Hex)
0x0000	Inverter Model	-	R	4: SV-iS5
0x0001	Applicable Motor Rating	-	R	0: 0.75 1: 1.5 2: 2.2 3: 3.7 4: 5.5 5: 7.5 6: 11 7: 15 8: 18.5 9: 22 A: 30 B: 37 C: 45 D: 55 E: 75 F: 90 10: 110 11: 132 12: 160 13: 200 14: 220 15: 280 16: 375 (Unit: kW)
0x0002	Inverter Input Voltage	-	R	0: 220V 1: 440V
0x0003	Software version	-	R	0100: Ver. 1.00, 0101: Ver 1.01
0x0005	Reference Frequency	0.01Hz	R/W	
0x0006	Operation reference	-	R/W	Bit 0: Stop Bit 1: Forward Run Bit 2: Reverse Run Bit 3: Fault Reset Bit 4: Emergency Stop
0x0007	Accel time	0.1 sec	R/W	
0x0008	Decel time	0.1 sec	R/W	
0x0009	Output Current	0.1 A	R	
0x000A	Output frequency	0.01 Hz	R	
0x000B	Output voltage	0.1 V	R	
0x000C	DC Link voltage	0.1 V	R	
0x000D	Output power	0.1 kW	R	

⁹ The changed value in Common affects the current setting but returns to the previous setting when power is cycled or Inverter is reset. However, changing value is immediately reflected in other parameter groups even in the case of Reset or Power On/Off.

Parameter Address	Parameter Name	Unit	Read/Write	Data Value (Hex)
0x000E	Operation reference	-	R	Bit 0: Stop Bit 1: Forward Run Bit 2: Reverse Run Bit 3: Fault (Trip) Bit 4: Accelerating Bit 5: Decelerating Bit 6: Speed reached Bit 7: DC Braking Bit 8: Stopping Bit 9: Not Used Bit10: Brake Open Bit 11: FWD Run Command Bit 12: REV Run Command Bit13: Rem. Run/Stop Bit14: Rem. Freq. Cmd
0x000F	Trip info	-	R	Bit 0: OCT1 Bit 1: OV Bit 2: EXT-A Bit 3: BX Bit 4: OCT2 Bit 5: GF Bit 6: OH Bit 7: ETH Bit 8: OLT Bit 9: HW-diag Bit 10: EXT-B Bit 11: FO Bit 12: OPT Bit 13: PO Bit 14: IOLT Bit 15: LV
0x0010	Input terminal info	-	R	Bit 0: P1 Bit 1: P2 Bit 2: P3 Bit 3: P4 Bit 4: P5 Bit 5: P6 , Bit 6: RST Bit 7: BX Bit 8: JOG , Bit 9: FX Bit 10: RX
0x0011	Output terminal info	-	R	Bit 0: Q1 (OC1), Bit 1: Q2 (OC2) Bit 2: Q3 (OC3), Bit 3: AUX Bit 4: 30AC
0x0012	V1	-	R	0 – FFC0
0x0013	V2	-	R	0 – FFC0
0x0014	I	-	R	0 – FFC0
0x0015	RPM	-	R	

< DRV Group >

Address	Parameter No.	Parameter Name	Default	Max value	Min value	Unit
5100	DRV#00	Cmd. freq	0	MaxFreq	0	0.01Hz
5101	DRV#01	Acc. Time	100	6000	0	0.1sec
5102	DRV#02	Dec. Time	200	6000	0	0.1sec
5103	DRV#03	Drive mode	1	2	0	
5104	DRV#04	Freq. mode	0	4	0	
5105	DRV#05	Step freq - 1	1000	MaxFreq	StartFreq	0.01Hz
5106	DRV#06	Step freq - 2	2000	MaxFreq	StartFreq	0.01Hz
5107	DRV#07	Step freq - 3	3000	MaxFreq	StartFreq	0.01Hz
5108	DRV#08	Current	-	-	-	0.1A
5109	DRV#09	Speed	-	-	-	1rpm
510A	DRV#10	DC Link Voltage		-	-	V

< FU1 Group >

Address	Parameter No.	Parameter Name	Default	Max value	Min value	Unit
5203	FU1 #03	Run prohibit	0	2	0	
5205	FU1 #05	Acc. pattern	0	4	0	
5206	FU1 #06	Dec. pattern	0	4	0	
5207	FU1 #07	Stop mode	0	2	0	
5208	FU1 #08	DcBr freq.	500	6000	StartFreq	0.01Hz
5209	FU1 #09	DcBlk time	10	6000	0	0.01 sec
520A	FU1 #10	DcBr value	50	200	0	%
520B	FU1 #11	DcBr time	10	600	0	0.1sec
520C	FU1 #12	DcSt value	50	200	0	%
520D	FU1 #13	DcSt time	0	600	0	0.1sec
5214	FU1 #20	Max freq.	6000	40000	4000	0.01Hz
5215	FU1 #21	Base freq.	6000	MaxFreq	3000	0.01Hz
5216	FU1 #22	Start freq.	50	6000	1	0.01Hz
5217	FU1 #23	Freq limit	0	1	0	
5218	FU1 #24	F-limit Lo.	50	HighFreq	StartFreq	0.01Hz
5219	FU1 #25	F-limit Hi.	6000	MaxFreq	LowFreq	0.01Hz

Address	Parameter No.	Parameter Name	Default	Max value	Min value	Unit
521A	FU1 #26	Torque boost	0	1	0	
521B	FU1 #27	Fwd boost	20	150	0	0.1%
521C	FU1 #28	Rev boost	20	150	0	0.1%
521D	FU1 #29	V/F pattern	0	2	0	
521E	FU1 #30	User freq. 1	1500	MaxFreq	0	0.01Hz
521F	FU1 #31	User volt. 1	25	100	0	%
5220	FU1 #32	User freq. 2	3000	MaxFreq	0	0.01Hz
5221	FU1 #33	User volt. 2	50	100	0	%
5222	FU1 #34	User freq. 3	4500	MaxFreq	0	0.01Hz
5223	FU1 #35	User volt. 3	75	100	0	%
5224	FU1 #36	User freq. 4	6000	MaxFreq	0	0.01Hz
5225	FU1 #37	User volt. 4	100	100	0	%
5226	FU1 #38	Volt control	1000	1100	400	0.1%
5227	FU1 #39	Energy save	0	30	0	%
5232	FU1 #50	ETH select	0	1	0	
5233	FU1 #51	ETH 1min	180	200	ETH Cont	%
5234	FU1 #52	ETH Cont	100	150	50	%
5235	FU1 #53	Motor type	0	1	0	
5236	FU1 #54	OL level	150	150	30	%
5237	FU1 #55	OL time	100	300	0	0.1sec
5238	FU1 #56	OLT select	1	1	0	
5239	FU1 #57	OLT level	180	200	30	%
523A	FU1 #58	OLT time	600	600	0	0.1sec
523B	FU1 #59	Stall prev.	0	7	0	
523C	FU1 #60	Stall level	180	250	30	%

< FU2 Group >

Address	Parameter No.	Parameter Name	Default	Max value	Min value	Unit
5307	FU2 #07	Dwell freq	500	MaxFreq	StartFreq	0.01Hz
5308	FU1 #08	Dwell time	0	100	0	0.1sec
530A	FU2 #10	Jump freq	0	1	0	
530B	FU2 #11	Jump lo 1	1000	Jump Hi 1	StartFreq	0.01Hz
530C	FU2#12	Jump Hi 1	1500	MaxFreq	Jump Lo 1	0.01Hz
530D	FU2 #13	Jump lo 2	2000	Jump Hi 2	StartFreq	0.01Hz
530E	FU2 #14	Jump Hi 2	2500	MaxFreq	Jump Lo 2	0.01Hz
530F	FU2 #15	Jump lo 3	3000	Jump Hi 3	StartFreq	0.01Hz
5310	FU2 #16	Jump Hi 3	3500	MaxFreq	Jump Lo 3	0.01Hz
5311	FU2 #17	Start Curve	40	100	1	%
5312	FU2 #18	End Curve	40	100	1	%
5313	FU2 #19	Trip select	0	3	0	BIT
5314	FU2 #20	Power-on run	0	1	0	
5315	FU2 #21	RST restart	0	1	0	
5316	FU2 #22	Speed Search	0	15	0	BIT
5317	FU2 #23	SS Sup-Curr	100	200	80	
5318	FU2 #24	SS P-gain	100	9999	0	
5319	FU2 #25	SS I-gain	1000	9999	0	
531A	FU2 #26	Retry number	0	10	0	
531B	FU2 #27	Retry delay	10	600	0	0.1sec
531E	FU2#30	Motor select	0	9	0	
531F	FU2#31	Pole number	4	12	2	
5320	FU2 #32	Rated-Slip	Depends on motor	1000	0	0.01Hz
5321	FU2 #33	Rated-Curr		2000	10	0.1A
5322	FU2 #34	No-load-Curr		2000	5	0.1A
5324	FU2 #36	Efficiency		100	70	%
5325	FU2 #37	Inertia rate	0	1	0	
5327	FU2 #39	Carrier freq	50	150	10	0.1kHz
5328	FU2 #40	Control mode	0	2	0	
5329	FU2 #41	Auto tuning	0	1	0	

Address	Parameter No.	Parameter Name	Default	Max value	Min value	Unit
532A	FU2 #42	Rs ¹⁰	Depends on motor	5000	0	0.001 ohm
532B	FU2 #43	Rr ¹¹		5000	0	0.001 ohm
532C	FU2 #44	Lsigma ¹²		MaxInduc	0	0.001 mH
532D	FU2 #45	SL P-gain	32767	32767	0	
532E	FU2 #46	SL I-gain	3276	32767	0	
532F	FU2 #47	proc PI mode	0	1	0	
5330	FU2 #48	PID Ref	1	1	0	
5331	FU2 #49	PID Ref Mode	0	5	0	
5332	FU2 #50	PID Out Dir	1	1	0	
5333	FU2 #51	PID F/B	0	2	0	
5334	FU2 #52	PID P-gain	3000	9999	0	0.1%
5335	FU2 #53	PID I-time	10	320	0	0.1sec
5336	FU2 #54	PID D-time	0	9999	0	0.1 msec
5337	FU2 #55	PID +limit	6000	MaxFreq	0	0.01Hz
5338	FU2 #56	PID -limit	6000	MaxFreq	0	0.01Hz
5339	FU2 #57	PID Out Inv	0	1	0	
533A	FU2 #58	PID OutScale	1000	9999	1	0.1%
533B	FU2 #59	PID P2-gian	1000	9999	0	0.1%
533C	FU2 #60	P-gain Scale	1000	1000	0	0.1%
5345	FU2 #69	Acc/Dec ch F	0	MaxFreq	0	0.01Hz
5346	FU2 #70	Acc/Dec freq	0	1	0	
5347	FU2 #71	Time scale	1	2	0	
5348	FU2 #72	PowerOn disp	0	12	0	
5349	FU2 #73	User disp	0	2	0	
534A	FU2 #74	RPM factor	100	1000	1	%
534B	FU2 #75	DB mode	1	2	0	

¹⁰ Depends on connected motor.

¹¹ Depends on connected motor.

¹² Depends on connected motor.

Address	Parameter No.	Parameter Name	Default	Max value	Min value	Unit
534C	FU2 #76	DB %ED	10	30	0	%
5351	FU2 #81	2nd Acc time	50	6000	0	0.1sec
5352	FU2 #82	2nd Dec time	100	6000	0	0.1sec
5353	FU2 #83	2nd BaseFreq	6000	maxFreq	3000	0.01Hz
5354	FU2 #84	2nd V/F	0	2	0	
5355	FU2 #85	2nd F-boost	20	150	0	0.1%
5356	FU2 #86	2nd R-boost	20	150	0	0.1%
5357	FU2 #87	2nd Stall	150	150	30	%
5358	FU2 #88	2nd ETH 1min	180	200	2nd ETH Cont	%
5359	FU2 #89	2nd ETH Cont.	120	2nd ETH 1min	50	%
535A	FU2 #90	2nd R-Curr	36	2000	10	0.1A
535D	FU2 #93	Para. Init	0	8	0	

< I/O Group >

Address	Parameter No.	Parameter Name	Default	Max value	Min value	Unit
5401	I/O #01	V1 filter	10	9999	0	ms
5402	I/O #02	V1 volt x1	0	V1 vort x2	0	0.01V
5403	I/O #03	V1 freq y1	0	MaxFreq	0	0.01Hz
5404	I/O #04	V1 volt x2	1000	1000	V1 volt x1	0.01V
5405	I/O #05	V1 freq y2	6000	MaxFreq	0	0.01Hz
5406	I/O #06	I filter	10	9999	0	ms
5407	I/O #07	I curr x1	400	I curr x2	0	0.01mA
5408	I/O #08	I freq y1	0	MaxFreq	0	0.01Hz
5409	I/O #09	I curr x2	2000	2000	I curr x1	0.01mA
540A	I/O #10	I freq y2	6000	MaxFreq	0	0.01Hz
540B	I/O #11	Wire broken	0	2	0	
540C	I/O #12	P1 define	0	32	0	
540D	I/O #13	P2 define	1	32	0	
540E	I/O #14	P3 define	2	32	0	
5411	I/O #17	Ti Filt Num	15	50	2	

Address	Parameter No.	Parameter Name	Default	Max value	Min value	Unit
5414	I/O #20	Jog freq	1000	MaxFreq	StartFreq	0.01Hz
5415	I/O #21	Step freq - 4	4000	MaxFreq	StartFreq	0.01Hz
5416	I/O #22	Step freq - 5	5000	MaxFreq	StartFreq	0.01Hz
5417	I/O #23	Step freq - 6	4000	MaxFreq	StartFreq	0.01Hz
5418	I/O #24	Step freq - 7	3000	MaxFreq	StartFreq	0.01Hz
5419	I/O #25	Acc time- 1	200	6000	0	0.1sec
541A	I/O #26	Dec time - 1	200	6000	0	0.1sec
541B	I/O #27	Acc time - 2	300	6000	0	0.1sec
541C	I/O #28	Dec time - 2	300	6000	0	0.1sec
541D	I/O #29	Acc time - 3	400	6000	0	0.1sec
541E	I/O #30	Dec time - 3	400	6000	0	0.1sec
541F	I/O #31	Acc time - 4	500	6000	0	0.1sec
5420	I/O #32	Dec time - 4	500	6000	0	0.1sec
5421	I/O #33	Acc time - 5	400	6000	0	0.1sec
5422	I/O #34	Dec time - 5	400	6000	0	0.1sec
5423	I/O #35	Acc time - 6	300	6000	0	0.1sec
5424	I/O #36	Dec time - 6	300	6000	0	0.1sec
5425	I/O #37	Acc time - 7	200	6000	0	0.1sec
5426	I/O #38	Dec time - 7	200	6000	0	0.1sec
5428	I/O #40	FM mode	0	3	0	
5429	I/O #41	FM adjust	100	200	10	%
542A	I/O #42	FDT freq	3000	MaxFreq	0	0.01Hz
542B	I/O #43	FDT band	1000	MaxFreq	0	0.01Hz
542C	I/O #44	Aux mode	12	23	0	
542D	I/O #45	Relay mode	2	7	0	BIT3
542E	I/O #46	Inv No.	1	31	1	
542F	I/O #47	Baud rate	3	4	0	
5430	I/O #48	Lost command	0	2	0	
5431	I/O #49	Time out	10	1200	1	0.1sec

Note) If you need to know specific parameter addresses for Auto Sequence Operation, contact LG representatives.

< EXT Group >

Address	Parameter No.	Parameter Name	Default	Max value	Min value	Unit
5501	EXT #01	Sub B/D				
5502	EXT #02	P4 define	3	32	0	
5503	EXT #03	P5 define	4	32	0	
5504	EXT #04	P6 define	5	32	0	
5505	EXT #05	V2 mode	0	2	0	
5506	EXT #06	V2 filter	10	9999	0	msec
5507	EXT #07	V2 volt x1	0	V2 volt x2	0	0.01V
5508	EXT #08	V2 freq y1	0	MaxFreq	0	0.01Hz
5509	EXT #09	V2 volt x2	1000	1000	V2 volt x1	0.01V
550A	EXT #10	V2 freq y2	6000	MaxFreq	0	0.01Hz
550E	EXT #14	F mode	0	2	0	
550F	EXT #15	F pulse set	0	1	0	
5510	EXT #16	F pulse num	1024	4096	360	
5511	EXT #17	F filter	10	9999	0	msec
5512	EXT #18	F pulse x1	0	1000	0	0.1kHz
5513	EXT #19	F freq y1	0	MaxFreq	0	0.01Hz
5514	EXT #20	F pulse x2	100	1000	0	0.1kHz
5515	EXT #21	F freq y2	6000	MaxFreq	0	0.01Hz
5516	EXT #22	PG P-gain	3000	9999	0	
5517	EXT #23	PG I-gain	300	9999	0	
5518	EXT #24	PG Slip Freq	100	200	0	%
551E	EXT #30	Q1 define	0	23	0	
551F	EXT #31	Q2 define	1	23	0	
5520	EXT #32	Q3 define	2	23	0	
5522	EXT #34	LM mode	1	3	0	
5523	EXT #35	LM adjust	100	200	10	%
5528	EXT #40	AM1 mode	0	3	0	
5529	EXT #41	AM1 adjust	100	200	10	%
552A	EXT #42	AM2 mode	3	3	0	
552B	EXT #43	AM2 adjust	100	200	10	%

< COM Group >

Address	Parameter No.	Parameter Name	Default	Max value	Min value	Unit
5601	COM #01	Opt B/D		7	0	
5602	COM #02	Opt mode		3	0	
5603	COM #03	Opt version	1.00			

Note) Setting Inverter Station # and Baud rate: I/O-46, 47

- COM-01 [Opt B/D]

Indicates Option boards installed. This value is automatically set when the boards are installed..

- COM-02 [Opt Mode]

Determines whether Run/Stop/Reference Frequency is set via Communication.

Value	Display	Description
0	None	Disabled
1	Command	Run/Stop setting via Communication ¹³
2	Freq	Frequency setting via Communication ¹⁴
3	Cmd + Freq	Run/Stop/Reference Frequency via Communication

- COM-03 [Opt Version]

Displays version of Option Board.

< APP Group >

Address	Parameter No.	Parameter Name	Default	Max value	Min value	Unit
5701	APP #01	APP mode	0	3	0	
5702	APP #02	Trv. Amp[%]	0	200	0	0.1%
5703	APP #03	Trv. Scr	0	500	0	0.1%
5704	APP #04	Trv Acc Time	20	6000	1	0.1sec
5705	APP #05	Trv Dec Time	30	6000	1	0.1sec
5706	APP #06	Trv Off Hi	0	200	0	0.1%
5707	APP #07	Trv Off Lo	0	200	0	0.1%

¹³ Run/Stop Setting Address - Use 0x0006 in Common

¹⁴ Freq Setting Address - Use 0x0005 in Common

Address	Parameter No.	Parameter Name	Default	Max value	Min value	Unit
5708	APP #08	Aux Mot Run	-	-	-	
5709	APP #09	Starting Aux	1	4	1	
570A	APP #10	Auto Op Time	-	-	-	
570B	APP #11	Start freq1	4999	MaxFreq	0	0.01Hz
570C	APP #12	Start freq2	4999	MaxFreq	0	0.01Hz
570D	APP #13	Start freq3	4999	MaxFreq	0	0.01Hz
570E	APP #14	Start freq4	4999	MaxFreq	0	0.01Hz
570F	APP #15	Stop freq1	1500	MaxFreq	0	0.01Hz
5710	APP #16	Stop freq2	1500	MaxFreq	0	0.01Hz
5711	APP #17	Stop freq3	1500	MaxFreq	0	0.01Hz
5712	APP #18	Stop freq4	1500	MaxFreq	0	0.01Hz
5713	APP #19	Aux start DT	600	9999	0	0.1sec
5714	APP #20	Aux stop DT	600	9999	0	0.1sec
5715	APP #21	Nbr Aux'	4	4	0	
5716	APP #22	Regul Bypass	0	1	0	
5717	APP #23	Sleep Delay	600	9999	0	0.1sec
5718	APP #24	Sleep Freq	19	MaxFreq	0	0.01Hz
5719	APP #25	WakeUp level	35	100	0	1%
571A	APP #26	AutoCh_Mode	1	2	0	
571B	APP #27	AutoEx intv	4320	5940	0	0.1sec
571C	APP #28	AutoEx level	20	100	0	1%
571D	APP #29	Inter-lock	0	1	0	
571E	APP #30	Actual Value	-	-	-	0.01Hz
571F	APP #31	Actual Perc	-	-	-	1%
5720	APP #32	Draw mode	0	3	0	
5721	APP #33	DrawPerc	100	150	0	1%



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LGIS constantly endeavors to improve its product so that information in this manual is subject to change without notice.

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