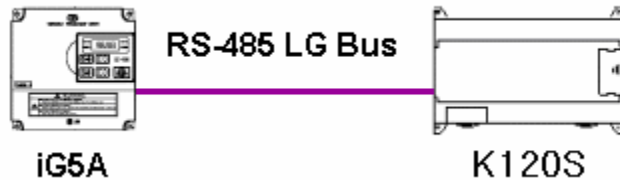


K120S and iG5A (VFD): LG Inverter protocol

This is a communication example to use RS-485 (channel 1) of K120S as master in LG Inverter protocol to communicate to iG5A.

(1) System configuration



(2) Parameter setting

2.1 iG5A setting

Basic parameter setting is required as follows:

I/O 59 [communication protocol]: 1 [LS BUS]

I/O 60 [VFD station number]: 1

I/O 61 [communication speed]: 4 (19200bps)

During communication, you're not able to change its parameter.

2.2 K120S setting

As you see in the following, do the parameter setting in Ch1 and make it 'Enabled'.

Station number: 0, Baud rate: 19200, Data bit: 8, Stop bit: 1, Parity bit: none

Select 'Dedicated LG INVERTER' and click List.

The screenshot shows the 'CommCh1' tab in the parameter setting software. The 'Communication' dropdown is set to 'Enable'. Under 'Communication Method', 'Station Number' is 0, 'Baud Rate' is 19200, 'Data Bit' is 8, 'Parity Bit' is None, and 'Stop Bit' is 1. Under 'Communication Channel', 'RS485' is selected. In the 'Protocol and Mode' section, 'Dedicated' is selected, and 'LG INVERTER' is chosen. The 'List' button is circled in blue. Other options include 'Master', 'Slave', 'Modbus', and 'User Defined'.

2.2.1 Parameter setting to send

Private Item Edit

Station No. : (0~31)

Address Number (1~8)

Mode
 Send
 Receive

Area
 PLC (P,M,L,K,T,C,D,S Area)
 LG Inverter (Start Address, HEX) : H

OK Cancel

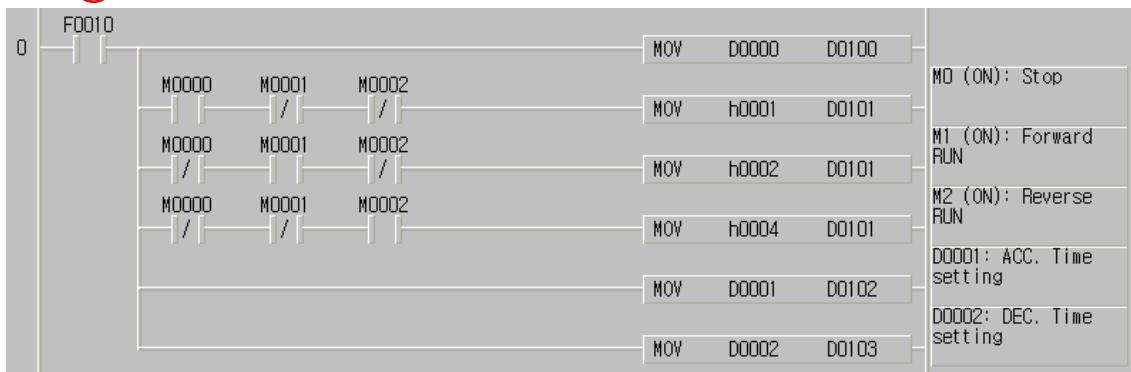
Station No: 1 (VFD station number)

Address Number: number of word to send. Here 4 words are to be sent from K120S to iG5A.

PLC area: D0100, LG Inverter area: H5

K120S	Direction	iG5A	Remark
D0100	====>	H0005	Reference Frequency
D0101	====>	H0006	Operation Command
D0102	====>	H0007	Acceleration Time
D0103	====>	H0008	Deceleration Time

0005	Reference frequency	0.01 Hz	R/W	
0006	Operation reference	-	R/W	Bit 0: Stop (R/W) Bit 1: Forward (R/W) Bit 2: Reverse (R/W) Bit 3: Fault reset (W) Bit 4: Emergency stop (W)
0007	Accel time	0.1 sec	R/W	
0008	Decel time	0.1 sec	R/W	



If M0001 is ON, iG5A is Forward RUN mode. If M2 is ON, it is Reverse RUN mode. With M0000 (ON), you are able to stop iG5A.

2.2.2 Parameter setting to receive

Private Item Edit

Station No. : (0~31)

Address Number (1~8)

Mode
 Send
 Receive

Area

PLC (P,M,L,K,T,C,D,S Area)

LG Inverter (Start Address, HEX) : H

OK Cancel

Station No: 1 (VFD station number)

Address Number: number of word to send. Here 2 words are to be received from iG5A.

PLC area: D0200, LG Inverter area: H7

K120S	Direction	iG5A	Remark
D0200	<===	H0007	Acceleration Time
D0201	<===	H0008	Deceleration Time

0x0007	Acceleration Time	0.1	sec	R/W
0x0008	Deceleration Time	0.1	sec	R/W

2.2.3 Parameter setting to receive

The screenshot shows a 'Private Item Edit' dialog box with the following fields and values:

- Station No. : 1 (0~31)
- Address Number : 2 (1~8)
- Mode: Send, Receive
- Area:
 - PLC (P,M,L,K,T,C,D,S Area): D0300
 - LG Inverter (Start Address, HEX) : H | E
- Buttons: OK, Cancel

Station No: 1 (VFD station number)

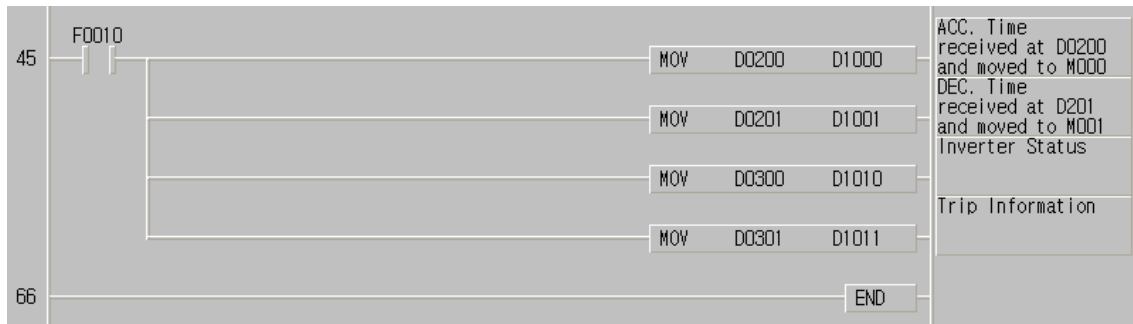
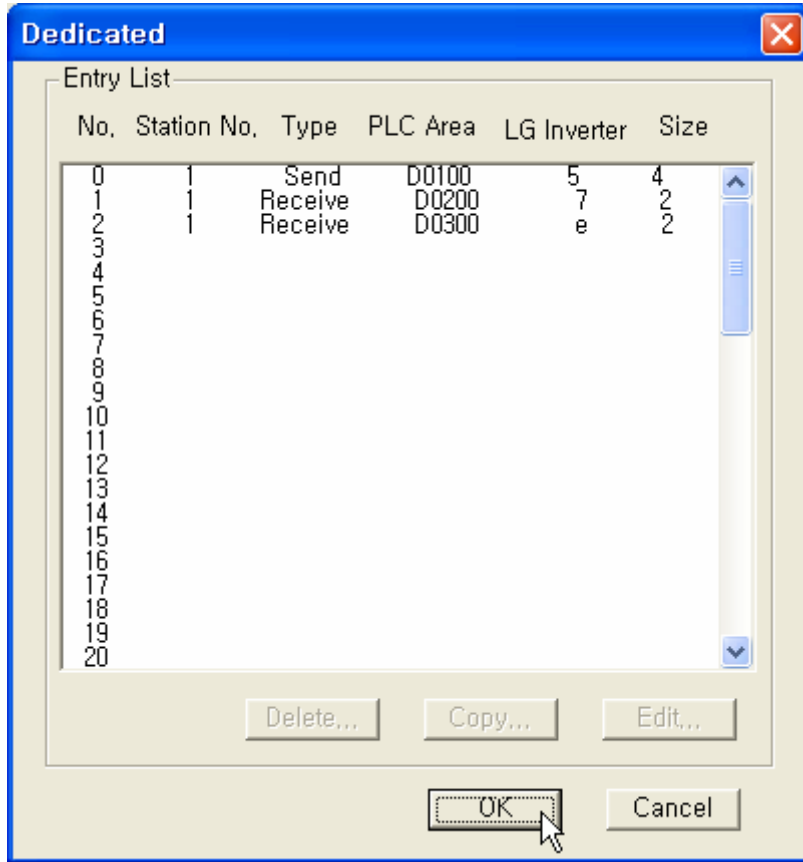
Address Number: number of word to send. Here 2 words are to be received from iG5A.

PLC area: D0300, LG Inverter area: HE

K120S	Direction	iG5A	Remark
D0300	<===	H000E	Inverter Status
D0301	<===	H000F	Trip Information

0x000E	Inverter status	R	BIT 0: Stop BIT 1: Forward running BIT 2: Reverse running BIT 3: Fault (Trip) BIT 4: Accelerating BIT 5: Decelerating BIT 6: speed arrival BIT 7: DC Braking BIT 8: Stopping Bit 9: not Used BIT10: Brake Open BIT11: Forward run command BIT12: Reverse run command BIT13: REM. R/S BIT14: REM. Freq.
0x000F	Trip information	R	BIT 0: OCT BIT 1: OVT BIT 2: EXT-A BIT 3: EST (BX) BIT 4: COL BIT 5: GFT (Ground Fault) BIT 6: OHT (Inverter overheat) BIT 7: ETH (Motor overheat) BIT 8: OLT (Overload trip) BIT 9: HW-Diag BIT10: EXT-B BIT11: EEP (Parameter Write Error) BIT12: FAN (Lock & Open Error) BIT13: PO (Phase Open) BIT14: IOLT BIT15: LVT

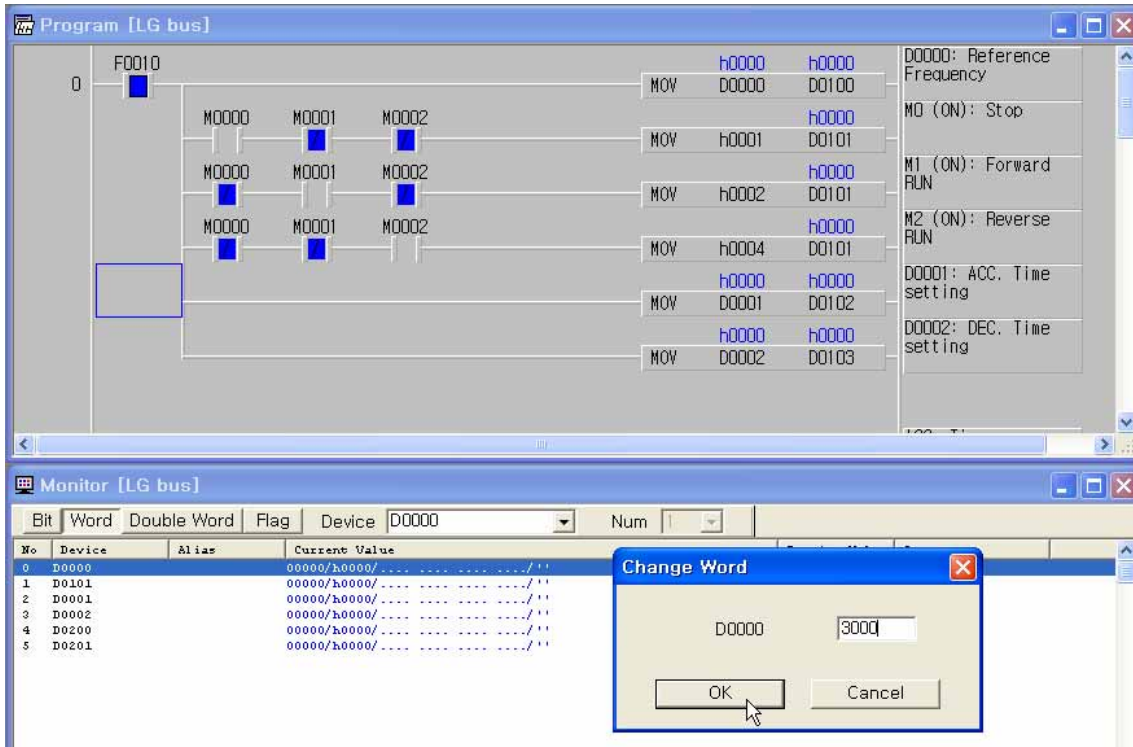
After parameter setting, then you will see the following window. Click OK.



This program is to show data received.

(3) Program monitor

3.1 Program monitoring to send



For reference frequency, set 3000 in D0000.

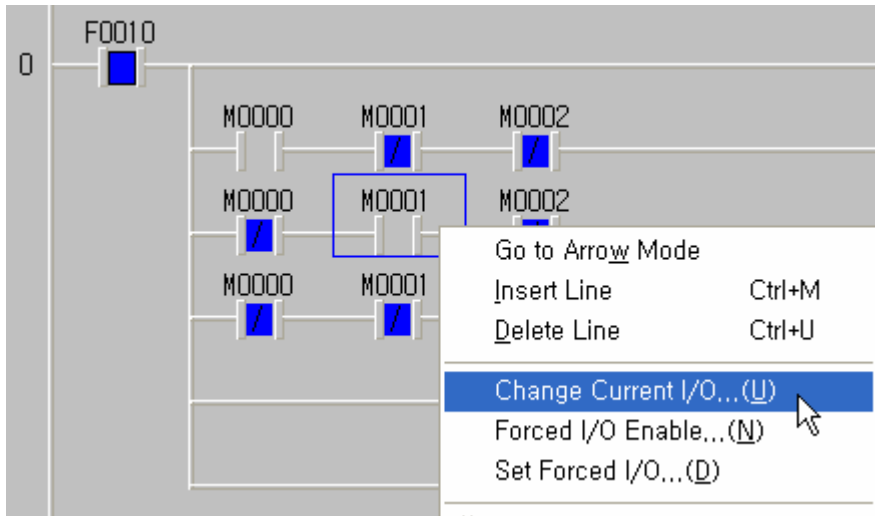
Set 100 in D0001 which will move its data to D0102.

Set 200 in D0002 which will move its data to D0103.

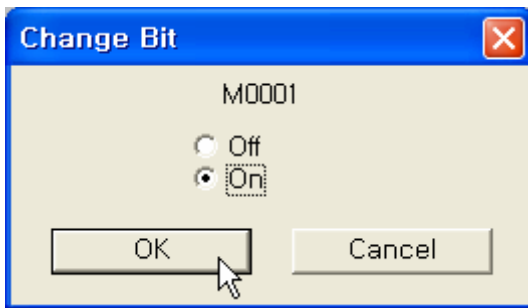
No	Device	Alias	Current Value
0	D0000		03000/h0BB8/..... B.98 7.54 3.../'?'
1	D0101		00000/h0000/..... /''
2	D0001		00100/h0064/..... .65. .2../'d'
3	D0002		00200/h00C8/..... 76.. 3.../'?'
4	D0200		00100/h0064/..... .65. .2../'d'
5	D0201		00200/h00C8/..... 76.. 3.../'?'

Now in this program, let's run iG5A in Forward Direction turning M0001 on.

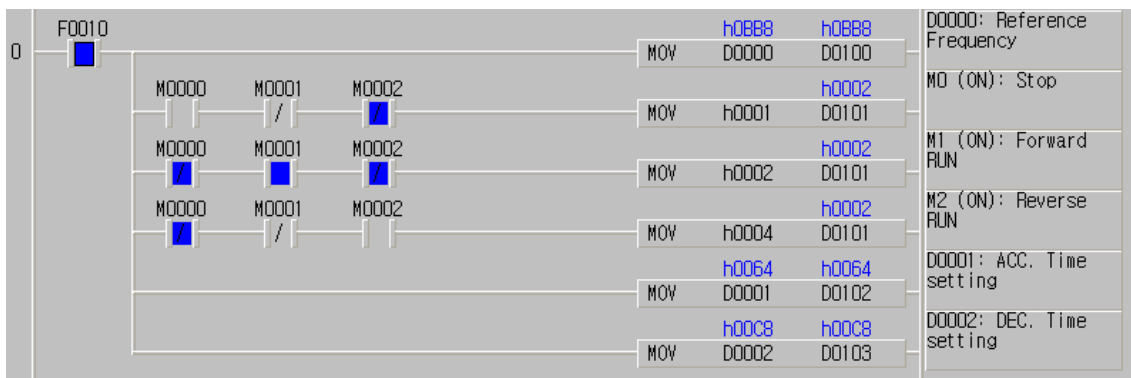
Click M0001, right-mouse click and select 'Change Current I/O' as follows.



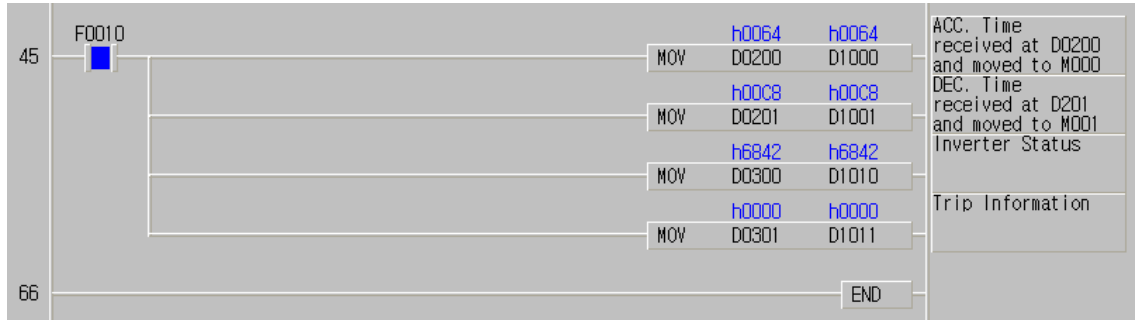
Click OK.



Now iG5A runs 30.00Hz in Forward Direction with 10.0s (ACC. Time) and 20.0s (DEC. Time).



3.2 Program monitoring to receive



You will see data are received from iG5A to K120S (D0200, D0201, D0300 and D0301).

No	Device	Alias	Current Value
0	D0000		03000/h0BB8/..... B.98 7.54 3.../'?'
1	D0101		00002/h0002/..... ..1./'γ'
2	D0001		00100/h0064/..... ..65. .2.../'d'
3	D0002		00200/h00C8/..... ..76. 3.../'?'
4	D0200		00100/h0064/..... ..65. .2.../'d'
5	D0201		00200/h00C8/..... ..76. 3.../'?'
6	D0300		26690/h6842/.ED. B... .6. .1./'Bh'
7	D0301		00000/h0000/..... ../'

Inverter Status information is stored at D0300 area. In the above, you will see bit 1, 6, B, D, and E are ON which means iG5A is 'Forward running, Speed arrival, Forward run command, REM. R/S, and REM. Freq as its data show in the following parameter table.

0x000E	Inverter status	R	BIT 0: Stop BIT 1: Forward running BIT 2: Reverse running BIT 3: Fault (Trip) BIT 4: Accelerating BIT 5: Decelerating BIT 6: speed arrival BIT 7: DC Braking BIT 8: Stopping Bit 9: not Used BIT10: Brake Open BIT11: Forward run command BIT12: Reverse run command BIT13: REM. R/S BIT14: REM. Freq.
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