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MD100P Series, Fan & Pump Variable Frequency Drive

RS485 & Modbus RTU Option Manual

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SAFETY PRECAUTIONS

- Always follow safety precautions to prevent accidents and potential hazards from occurring.
- In this manual, safety messages are classified as follows:

⚠ **WARNING**	Improper operation may result in serious personal injury or death.
⚠ **CAUTION**	Improper operation may result in slight to medium personal injury or property damage.

- 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 operating instructions handy for quick reference.
- Read this manual carefully to maximize the performance of LS485(LS Bus)/Modbus-RTU/Metasys-N2 for MDLV-100P series inverters and ensure its safe use.

⚠ CAUTION

- **Be cautious, when handling the CMOS components of the Option Board.**
  Static may lead to malfunctioning of the product.
- **Turn off the inverter power, when changing the communication cable.**
  Otherwise, you may damage the board or a communication error may occur.
- **Make sure to insert the Option Board connector to the inverter precisely.**
  Otherwise, you may damage the board or a communication error may occur.
- **Check the parameter unit before setting up the parameter.**
  Otherwise, a communication error may occur.

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1. Introduction

MDLV100P

This instruction manual describes about specification and how to set up the RS485 option board for MDLV-100P drive to communicate with PLC or PC. MDLV-100P series drive can be controlled and monitored by PLC , PC and other master module with RS485 option board.

1.1 Features

Inverter can be easily applicable to Factory Automation because operation and monitoring is available by User-program.

* Parameter setting and monitoring is available via computer.
  (Ex: Freq. Command, Run/Stop etc.)
* Interface type of RS485 reference:
  1) Allows the drive to communicate with any other computers.
  2) Allows one computer to control up to 31 drives with multi-drop link system.
  3) Noise-resistant interface.

Users can use any kind of RS232/485 converters. It is possible to communicate with computer which has built-in type of RS232 card. The specifications and performances of converters depend on the manufacturers, but the basic functions are the same. Refer to the converter manual for detailed specifications and instructions on how to use.

1.2 Before Installation

Before installation and operation, this manual should be read thoroughly. If not, it could cause personal injury or damage other equipment.

2. Specification

2.1 Performance specification

Items	Specifications
Communication method	RS485 (RS232/485 converter)
Transmission form	Bus method, Multi-drop Link System
Applicable inverter	MDLV-100P series
Converter	Converter with RS232 card embedded
Number of inverters connected	Maximum 31 drives connectable [1]
Transmission distance	Max. 1200m (Less than 700m recommended) [2]

2.2 Hardware Specifications

Items		Specifications
Installation		Use option connector on the inverter control board
Power Supply	Control Board	From inverter power supply(5V)
	Communication Board	From control board (5V)

[1] The number of inverters to be connected is up to 31.
[2] The specification of length of the communication cable is max. 1200m. To ensure stable communication, limit its length below 700m.

2.3 Communication Specification

Items	Specifications
Communication speed	1200 /2400/4800/9600/19200/38400/76800/115200 bps [3]
Control procedure	Asynchronous communication system
Communication system	Half-duplex system
Character system	LS485(LS Bus): ASCII(8bit) Modbus-RTU: Binary (8 bit) Metasys-N2: ASCII (8 bit)
Start/Stop bit	Start 1bit, Stop 1/2bit
Error check	LS485(LS Bus) : Checksum (2 byte) Modbus-RTU: CRC16 (2 byte) Metasys-N2: CRC 16 (2 byte)
Parity check	None/Even/Odd [4]

3. Product Details

3.1 RS485 Option Board Layout and Names of Part

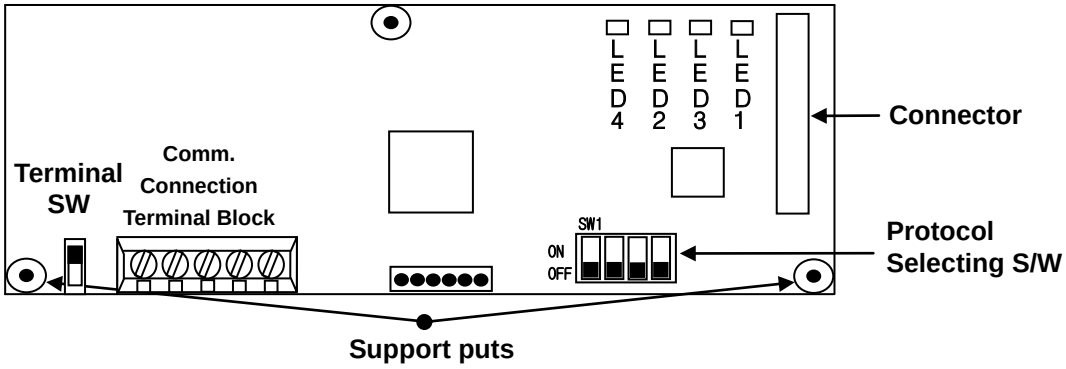
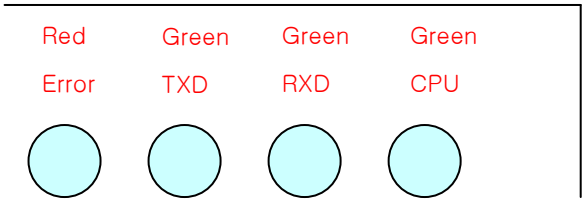


Figure 1. Layout and Names of Part

3.2 Status LED



CPU LED (LED1)	Indicates the option card works normally.	
RXD LED (LED3)	Receiving communication signal	
TXD LED (LED2)	Transmitting communication signal	
ERR LED (LED4)	Blinking intermittently	Receiving wrong DATA (Normal operation)
	Blinking simultaneously with CPU LED	Communication malfunction between drive and option board
	Blinking oppositely to CPU LED	Network Connection Time Out

[3] Metasys-N2: Fixed 9600 bps100P
[4] Metasys-N2: Fixed No Parity

3.3 Termination Configuration

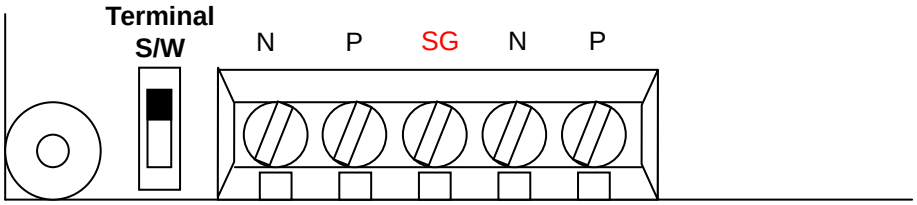


Figure 2. Communication Terminal Block

Pin	SG	N	P
Role	Signal Ground	Signal line	

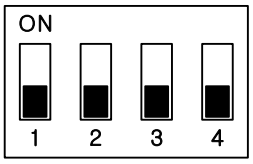
SG : Ground of communication terminal.
Terminal S/W: Drive at the end of the network must turn On the S/W.

3.4 Communication Protocol Selection (LS485(LS Bus)/Modbus-RTU/Metasys-N2)

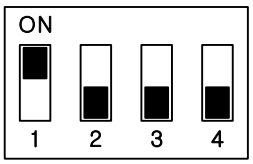
- Setting method

  The Modbus-RTU protocol is selected when the No.1 (among the DIP switches located on the lower right corner of the option card) is ON, and LS485(LS Bus) protocol is selected when the No.1 is OFF. MDLV100PMDLVMDLV-100P series have the same setting.

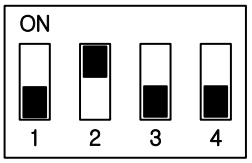
  (At this time the On/Off status of the No.3, 4 DIP switches has not an effect on the protocol selection.)



→ LS485(LS Bus) protocol



→ Modbus-RTU protocol selection



→ Metasys-N2 Protocol selection

- Precautions when setting

  Even if the Master's protocol is changed during communication between Master and slaves (LS Drives), the communication is resumed automatically in case of adjusting the DIP switch on the option card in accordance with the master's protocol. 100P

4. Installation

4.1 Installing RS485 Option Board and Parameter setting

① Connect RS485 Option Board connector to the option connector inside the inverter control board. (See Figure 3, 4). Make sure that the support is well connected. if the position of the support is not right, it means that the option card is not connected correctly.

② Power up the inverter after verifying the option card is installed properly.

③ When powering up the inverter, CPU LED is blinking per second after all LEDs blink one after another.

④ If “CPU LED” is not blinking, power down the inverter swiftly and check for the proper installation of the option card.

(**Caution**: The inverter and option card may get damaged in case that power is applied to the inverter for a long time when CPU LED is not blinking.)

* If this problem occurs continuously, contact LS distributors.

⑤ Check displayed < COM-01 > for MDLV-100P MDLVis set to RS485.

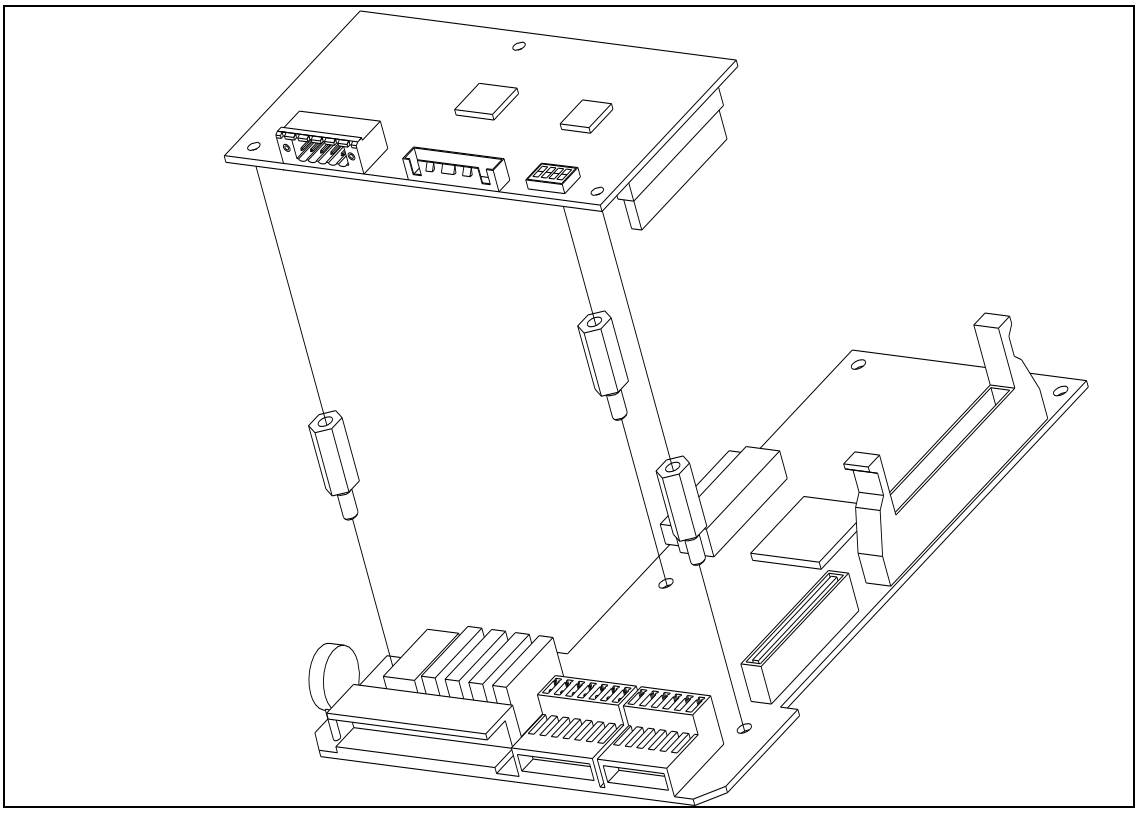


Figure 3. MDLV-100P RS485 Option Board Installation

⑥ Set the parameters as below when the above steps are all done.

MDLV100P

1. MDLV100PLS485(LS Bus), Modbus-RTU Setting [5]

Parameter code	Display	Setting Value
I/O-92	COM Lost Cmd [6]	0 : None (Factory Default) 1 : FreeRun 2 : Stop
I/O-93	COM Time Out [7]	0.1 ~ 120 sec 1.0 sec (Factory Default)
COM-01	Opt B/D	RS485 displayed automatically
COM-02	Opt mode	Set Commands controlled via communication 0: None (Not set Run/Freq. command via communication) 1: Command (Set Run command via communication) 2: Freq (Set Freq. commands via communication) 3 : Cmd+Freq (Set Run/Freq. command via communication)
COM-61	-	Communication card Protocol displayed (LS485(LS Bus)/Modbus RTU/Metasys N2) LED status on the Communication card displayed 0bit: CPU 1bit: RXD 2bit: TXD 3bit: ERR
COM-62	Station ID	1 ~ 250 1: Factory Default (Verify the assigned number is not duplicated)
COM-63	Baud Rate	0 : 1200 bps 1 : 2400 bps 2 : 4800 bps 3 : 9600 bps (Factory Default) 4 : 19200 bps 5 : 38400 bps 6 : 76800 bps 7 : 115200 bps
COM-64	Parity/Stop	0 : 1 Stop bit, No Parity (Factory Default) 1 : 2 Stop bit, No Parity 2 : 1 Stop bit, Even Parity 3 : 1 Stop bit, Odd Parity
COM-65	Delay Time	0 ~ 100msec 5msec : Factory Default
COM-66	Comm Status	RCV:## ERR:## The number of Received and Error Frame displayed
COM-67	Comm UpDate	After Comm Update set to “Yes”, it is changed to “No” automatically.

[5] it is applied after ‘COMM Update’ of COM-67 setting is changed ‘Yes’ mode.
[6] It is used for Emergency Stop when communication between inverter and Master is not done properly. It is activated when communication is not done even once for the set time. It indicates the inverter is not controlled by Remote. Set this value for safety.
[7] If communication between master and drive is not connected for the setting time, drive will be stop according to ‘COM Lost Cmd’ setting.

2. Metasys-N2 Setting [11]

Parameter code	Display	Setting Value
I/O-92	COM Lost Cmd [12]	0 : None (Factory Default) 1 : FreeRun 2 : Stop
I/O-93	COM Time Out [13]	0.1 ~ 120 sec 1.0 sec (Factory Default)
COM-01	Opt B/D	RS485 displayed automatically
COM-02	Opt mode	Set Commands controlled via communication 0: None (Not set Run/Freq. command via communication) 1: Command (Set Run command via communication) 2: Freq (Set Freq. commands via communication) 3 : Cmd+Freq (Set Run/Freq. command via communication)
COM-61	-	Communication card Protocol displayed (LS485(LS Bus)/Modbus RTU/Metasys N2) LED status on the Communication card displayed 0bit: CPU 1bit: RXD 2bit: TXD 3bit: ERR
COM-62	Station ID	1 ~ 250 1: Factory Default (Verify the assigned number is not duplicated)
COM-63	Comm Status	RCV:## ERR:## The number of Received and Error Frame displayed
COM-67	Comm UpDate	After Comm Update set to “Yes”, it is changed to “No” automatically.

⑦ MDLV

⑦ Turn Off the inverter power for the connection of converter after option board installation and parameter setting.

⑧ In case of option board used on terminal, terminal switch is turned On according to Figure 2.

[11] it is applied after ‘COMM Update’ of COM-67 setting is changed ‘Yes’ mode.

[12] It is used for Emergency Stop when communication between inverter and Master is not done properly. It is activated when communication is not done even once for the set time. It indicates the inverter is not controlled by Remote. Set this value for safety.

[13] If communication between master and drive is not connected for the setting time, drive will be stop according to ‘COM Lost Cmd’ setting.

4.2 Connection Guide for the Communication Option Board, the Computer and the Converter

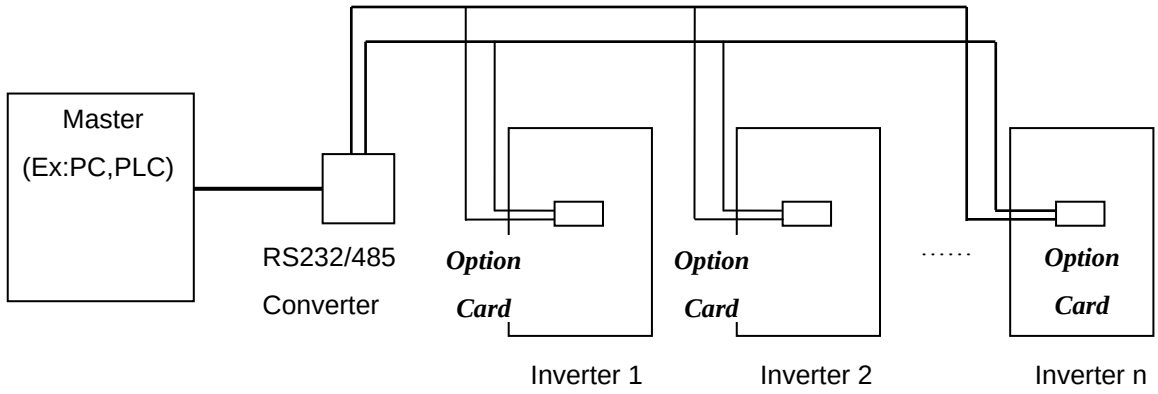


Figure 4. Communication System Configuration

5. Communication protocol

- Use LS485(LS Bus) protocol (for LS only) and Modbus-RTU protocol. LS485(LS Bus) and Modbus-RTU protocol are Open protocol. For more information, contact LS distributor.
- Computer or other host acts as Master while inverters act as slaves. The drive responds to Read/Write command from Master.

5.1 LS485(LS Bus) Protocol

5.1.1 Basic format

- Command message (Request):

ENQ	Inverter No.	CMD	Data	SUM	EOT
1 byte	2 byte	1 byte	n byte	2 byte	1 byte

- Normal response (Acknowledge Response):

ACK	Inverter No.	CMD	Data	SUM	EOT
1 byte	2 byte	1 byte	n * 4 byte	2 byte	1 byte

- Negative response (Negative Acknowledge Response):

NAK	Inverter No.	CMD	Error code	SUM	EOT
1 byte	2 byte	1 byte	2 byte	2 byte	1 byte

- Description:

* Request starts with “ENQ” and ends with “EOT”.

* Acknowledge Response starts with “ACK” and ends with “EOT”.

* Negative Acknowledge Response starts with “NAK” and ends with “EOT”.

* “Inverter Number” represents the number of Inverters and indicates in 2 byte ASCII-HEX.
(ASCII-HEX: Hexadecimal consists of ‘0’ ~ ‘9’, ‘A’ ~ ‘F)

* CMD: Capital letter (“IF Error” when small letter is used.)

Character	ASCII-HEX	Command
‘R’	52h	Read
‘W’	57h	Write
‘X’	58h	Request for Monitor Register
‘Y’	59h	Execution for Monitor Register

* Data: ASCII-HEX

Ex) when data value is 3000: 3000 → ‘0’ ‘B’ ‘B’ ‘8’ h → 30h 42h 42h 38h

* Error code: ASCII (20h ~ 7Fh)

* Receive/Send buffer size: Receive= 39 byte, Send=44 byte

* Monitor register buffer: 8 Word

* SUM: to check the communication error

SUM= ASCII-HEX format of lower 8 bit of (Inverter No. + CMD + DATA)

Ex) Command Message (Request) for reading one address from address “9000”

ENQ	Inverter No.	CMD	Address	Number of address	SUM	EOT
05h	“01”	“R”	“3000”	“1”	“AC”	04h
1	2	1	4	1	2	1

SUM = ‘0’ + ‘1’ + ’R’ + ‘3’ + ‘0’ + ‘0’ + ‘0’ + ‘1’

= 30h + 31h + 52h + 33h + 30h + 30h + 30h + 31h

= 1A7h (Except Control value: ENQ, ACK, NAK, etc.)

5.1.2 Detailed Read protocol

- Request for Read: Request for reading Word data of the successive ‘n’ number from address “XXXX”

ENQ	Inverter No.	CMD	Address	Number of Address	SUM	EOT
05h	“01” ~ “1F”	“R”	“XXXX”	“1” ~ “8” = n	“XX”	04h
1	2	1	4	1	2	1

Total byte = 12, The quotation marks (“ ”) mean character.

- Acknowledge Response:

ACK	Inverter No.	CMD	Data	SUM	EOT
06h	“01” ~ “1F”	“R”	“XXXX”	“XX”	04h
1	2	1	N * 4	2	1

Total byte = 7 + n * 4 = Max. 39

- Negative Acknowledge Response:

NAK	Inverter No.	CMD	Error code	SUM	EOT
15h	“01” ~ “1F”	“R”	“**”	“XX”	04h
1	2	1	2	2	1

Total byte = 9

5.1.3 Detailed Write protocol

- Request for Write:

ENQ	Inverter No.	CMD	Address	Number of Address	SUM	EOT	EOT
05h	“01” ~ “1F”	“W”	“XXXX”	“1” ~ “8” = n	“XXXX…”	“XX”	04h
1	2	1	4	1	n * 4	2	1

Total byte = 12 + n * 4 = Max. 44

- Acknowledge response:

ACK	Inverter No.	CMD	Data	SUM	EOT
06h	“01” ~ “1F”	“W”	“XXXX…”	“XX”	04h
1	2	1	n * 4	2	1

Total byte = 7 + n * 4 = Max. 39

- Negative response:

NAK	Inverter No.	CMD	Error code	SUM	EOT
15h	“01” ~ “1F”	“W”	“**”	“XX”	04h
1	2	1	2	2	1

Total byte = 9

5.1.4 Detailed Monitor Register protocol

- Monitor Register

* Request for Monitor Register:

Monitor Register has the function to update data periodically after assigning the necessary data to be monitored continuously.

Request for registering the ‘n’ number of Address (non-successive)

ENQ	Inverter No.	CMD	Number of Address	Address	SUM	EOT
05h	“01” ~ “1F”	“X”	“1” ~ “8”=n	“XXXX…”	“XX”	04h
1	2	1	1	n * 4	2	1

Total byte = 8 + n * 4 = Max 40

* Acknowledge Response:

ACK	Inverter No.	CMD	SUM	EOT
06h	“01” ~ “1F”	“X”	“XX”	04h
1	2	1	2	1

Total byte = 7

* Negative Acknowledge Response:

NAK	Inverter No.	CMD	Error code	SUM	EOT
15h	“01” ~ “1F”	“X”	“**”	“XX”	04h
1	2	1	2	2	1

Total byte = 9

- Monitor Action

* Action Request for Monitor Register:

Request for reading data of address registered by Monitor Register.

ENQ	Inverter No.	CMD	SUM	EOT
05h	“01” ~ “1F”	“Y”	“XX”	04h
1	2	1	2	1

Total byte = 7

* Acknowledge response:

ACK	Inverter No.	CMD	Data	SUM	EOT
06h	“01” ~ “1F”	“Y”	“XXXX…”	“XX”	04h
1	2	1	n * 4 byte	2 byte	1 byte

Total byte = 7 + n * 4 = Max 39

* Negative response:

NAK	Inverter No.	CMD	Error code	SUM	EOT
15h	“01” ~ “1F”	“Y”	“**”	“XX”	04h
1	2	1	2	2	1

Total byte = 9

5.1.5 Error code

Error code	Display	Description
ILLEGAL FUNCTION	IF	When the command received cannot be executed in the option card. It means that there is no corresponding command.
ILLEGAL DATA ADDRESS	IA	When parameter address received is invalid. When monitor is executed without Monitor Register.
ILLEGAL DATA VALUE	ID	When the DATA received is invalid.
WRITE MODE ERROR	WM	In case of Read Only or Write Disabled during operation.
FRAME ERROR	FE	When the frame size, internal Num or Sum is incorrect.
TIME OUT ERROR	TO	When DPRAM communication does not work within a certain time.
DPRAM OFF LINE	DO	When DPRAM is Off Line.
INVALID ID NUMBER	IN	When Inverter Number is incorrect.
UNDEFINED CONDITION	UC	Except for the above cases.

※TO Error: Occurs when trying to communicate while the drive is initializing. The drive cannot respond while the drive is initializing. After initialization, it operates normally.

5.2 Modbus-RTU Protocol

- Use Modbus-RTU protocol. Modbus-RTU protocol is Open protocol.
- Computer or other host acts as Master while drive act as slaves. The drive responds to Read/Write command from Master.

5.2.1 Available Function code

Function code	Description
0x03	Read Hold Register
0x04	Read Input Register
0x06	Preset Single Register
0x10	Preset Multiple Register

5.2.2 Exception code

Exception code		Description
0x01		ILLEGAL FUNCTION
0x02		ILLEGAL DATA ADDRESS
0x03		ILLEGAL DATA VALUE
0x06		SLAVE DEVICE BUSY
User define	0x14	1. Write Disable (Address 0x0004 value is 0). 2. Read Only or Not Program during Running.

5.3 Baud Rate

1200, 2400, 4800, 9600, 19200, 38400, 76800, 115200 bps (Default value: 9600bps)

5.4 Broadcast Function

- The broadcast function is used when command is given to all drives connected to network.
- In the case of LS485(LS Bus), all inverters run without response (Slave->Master) when command is given to Inverter Number 255 (0xFF).
- In the case of Modbus-RTU, all inverters run without response (Slave->Master) when command is given to Inverter Number 0 (0x00).

6. Trouble shooting

Refer to this chapter when occurring problem in communication with computer while using this option card.

- CPU LED malfunction

Expected State	The inverter is not working normally or the inverter and the option card are not connected properly.
Corrective Measures	1. Verify the power is applied to the inverter. 2. Verify the option card is installed properly within the inverter when the inverter is working normally.

- RXD and TXD LEDs malfunction

Check Points	Corrective Measures
Is the power applied to the converter?	Apply power to the converter.
Is the connection between the converter and computer correct?	Refer to the converter manual
Is the communication card installed within the inverter properly?	Refer to “4 Installation”.
Does Master start the communication?	Start the communication.
Is the communication speed setting of the inverter correct?	Refer to “4 Installation”.

Check Points	Corrective Measures
Is the data format of User program correct?	Modify User program [14]
Is the connection between the converter and the option card correct?	Refer to “4. Installation”.

- ERR LED is working

State	Corrective Measures
Blinking intermittently	In case that the option card is receiving wrong data due to Noise or other causes. It is normal.
Blinking oppositely to CPU LED	Network is not communicated during TimeOut setting. Verify the state of Master. (MDLV-100P : I/O-93MDLV)
Blinking simultaneously CPU LED	In case of occurring the communication trouble between the option card and the inverter. Power up and down the inverter. If this problem occurs continuously, contact LS distributor.
● Concerning the frequency (speed)/Run command by the option card, please refer to COM group for MDLV-100P.	

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7. Parameter Code (All parameter addresses are Hex. values)

<Common Area>: Common Area is addresses to be used commonly regardless of inverter models. Some addresses are used only for specific inverter models. [15]

7.1 MDLV-100P Common Area

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Address	Parameter	Unit	R/W	Data value			
0x0000	Inverter model	-	R	9 : MDLV-100P			
0x0001	Inverter capacity	-	R	MDLV-100P 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: 220 14: 280 15: 315 16: 375 17: 450 (Unit : kW)			
0x0002	Inverter	-	R	0: 220V Class 1: 440V Class			
0x0003	S/W Version	-	R	0100h : Ver 1.00, 0110h : Ver 1.10			
0x0005	Freq. Command	0.01Hz	R/W				
0x0006	Run/Stop Command	-	R/W	BIT 0	Stop		
				BIT 1	Forward Run (FX)		
				BIT 2	Reverse Run (RX)		
				BIT 3	Fault Reset (0→1)		
				BIT 4	Emergency Stop		
				BIT 5	Not Used		
			R	BIT 6	Run/Stop Command	0	Terminal block
						1	Keypad

[14] User program is User-made S/W for PC.

[15] When the data is changed by Common Area parameter, its data is not saved.
That is, the changed data is effective in the present state but the data is reset to the previous value after the inverter is reset or powered On / Off. Even though the inverter is reset or powered On / Off, the changed data is effective in case of changing the data by each group parameter, not the Common Area.

Address	Parameter	Unit	R/W	Data value			
				BIT 7	Information	2	Option
						3	Int. 485
				BIT 8	Freq. Command Information	0~16	Multi-step Speed Freq. (0.2~16)
						17~19	UpDown Operation (Up, Down, UD Zero)
				BIT 9		20~21	Not used
				BIT 9		22~25	Analog Operation (V1, V1S, I, V1I)
				BIT 10		26	Pulse
						27	Sub
				BIT 11		28	Int. 485
						29	Option
				BIT 12		30	Jog
						31	PID
				BIT 13	Not Used		
				BIT 14	Not Used		
				BIT 15	Set when Network malfunction occurs		
0x0007	Acceleration Time	0.1 sec	R/W				
0x0008	Deceleration 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				
0x000E	Operating Status	-	R	BIT 0	Stop		
				BIT 1	Forward Run (FX)		
				BIT 2	Reverse Run (RX)		
				BIT 3	Fault (Trip)		
				BIT 4	Accelerating		
				BIT 5	Decelerating		
				BIT 6	Speed Arrival		
				BIT 7	Forward Command		
				BIT 8	DC Braking		
				BIT 9	Not Used		
				BIT10	Brake Open		
				BIT11	Forward Run Command		
				BIT12	Reverse Run Command		
				BIT13	REM. R/S (Int. 485, OPT)		
				BIT14	REM. Freq. (Int. 485, OPT)		
				BIT15	Not Used		
0x000F	Trip Information	-	R	BIT 0	OCT1		
				BIT 1	OV		
				BIT 2	EXT-A		
				BIT 3	BX		
				BIT 4	LV		
				BIT 5	Not Used		
				BIT 6	GF(Ground Fault)		
				BIT 7	OH (Inverter overheat)		
				BIT 8	ETH (Motor overheat)		
				BIT 9	OLT (Overload trip)		

Address	Parameter	Unit	R/W	Data value	
				BIT10	HW-Diag
				BIT11	Not Used
				BIT12	OCT2
				BIT13	OPT (Option error)
				BIT14	PO (Phase Open)
				BIT15	IOLT
0x0010	Input Terminal Information	-	R	BIT 0	M1
				BIT 1	M2
				BIT 2	M3
				BIT 3	M4
				BIT 4	M5
				BIT 5	M6
				BIT 6	M7
				BIT 7	M8
				BIT 8	P4
				BIT 9	P5
				BIT 10	P6
				BIT11~15	Not Used
0x0010	Output Terminal Information	-	R	BIT 0	AUX1
				BIT 1	AUX2
				BIT 2	AUX3
				BIT 3	AUX4
				BIT 4	Q1 (OC1)
				BIT 5	Q2 (OC2)
				BIT 6	Q3 (OC3)
				BIT 7	30AC
				BIT 8~15	Not used
0x0012	V1	-	R	0000h ~FFC0h	
0x0013	V2	-	R	0000h ~FFC0h	
0x0014	I	-	R	0000h ~FFC0h	
0x0015	RPM	-	R		
0x001A	Unit display	-	R	0 : Hz, 1 : RPM	
0x001B	Pole number	-	R		
0x001C	Custom Version	-	R		

※ Refer to the user manual for the communication address regarding MDLV-100P Function Code.

7.2 100P

7.2 MDLVMDLV

7.2 MDLVMDLVMDLV

7.2 MDLV

7.2 MDLVMDLV

7.2 MDLVMDLVMDLVMetasys-N2 Protocol I/O Point Map

7.2.1 Analog Output

Output point map to control the drive from Metasys-N2 master

No.	Unit	Name	Range	Description

No.	Unit	Name	Range	Description
AO-1	Hz	Command Frequency	0.00 − Max Freq (FU1-20)	When COM02(Opt Mode) is “Cmd+Freq” or “Freq”, frequency can be set via N2 communication protocol. The setting value is not saved after Power Off.
AO-2	Sec	Accel Time	0.0 − 600.0	The setting value is not saved after Power Off..
AO-3	Sec	Decel Time	0.0 − 600.0	The setting value is not saved after Power Off.
AO-4	-	Drive mode	0 − KeyPad 1 − Fx/Rx-1 2 − Fx/Rx-2	When COM02(Opt Mode) is “Cmd+Freq” or “Command”, this setting is not valid via N2 protocol.
AO-5	-	Freq mode	0 − KeyPad−1 1 − KeyPad−2 2 − V1 3 − V1S 4 − I 5 − V1+I 6 − Pulse 7 − Int 485 8 − Ext. PID	COM02 (Opt Mode) is “Cmd+Freq” or “Freq” , the setting is not valid via N2 protocol.

7.2.2 Binary Output

Output point map to control the drive from Metasys-N2 master

No.	Name	Range	Description
BO-1	Stop	1 − Stop	If opiptionfrom lid alid aved after Podrive will be stop while running.
BO-2	Run Forward	1 − Forward Run	If rward Run stop while runningafter Podrive will run to forward direction.
BO-3	Run Reverse	1 − Reverse Run	If ‘1f verse Runrdtop while runningafter Power Off.addresses from 0x0100. I
BO-4	Reset Fault	1 − Reset	If setFaultnrdtop while runningafter PodriveTrip will reset.
BO-5	Emergency Stop	1 − Bx	If ‘1f rgency Stop op while runningafter Power Off.addresses from 0x01

7.2.3 Analog Input

Metasys-N2 master monitors the state of drive.

No.	Unit	Name	Description
AI-1	Amps	Output Current	Monitoring the present output current value
AI-2	Hz	Output Frequency	Monitoring the present output frequency (Hz)
AI-3	RPM	Output Speed	Monitoring the present speed (RPM)

No.	Unit	Name	Description
AI-4	-	Fault Code	0x0000 − No fault 0x0001 − OC 0x0002 − OV 0x0004 − EXT 0x0008 − BX 0x0010 − LV 0x0020 − FUSE 0x0040 − GF 0x0080 − OH 0x0100 − ETH 0x0200 − OLT

7.2.4 Binary Input

Metasys-N2 master monitors the binary input/output state of drive.

No.	Name	Description
BI-1	Stopped	
BI-2	Running Forward	
BI-3	Running Reverse	
BI-4	Faulted	
BI-5	Accelerating	
BI-6	Decelerating	
BI-7	Reached Full Speed	
BI-8	DC Braking	
BI-9	M1 Input	
BI-10	M2 Input	
BI-11	M3 Input	
BI-12	M4 Input	
BI-13	M5 Input	
BI-14	M6 Input	
BI-15	M7 Input	
BI-16	M8 Input	
BI-17	30AC fault relay	Output state of 30AC fault relay

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