

# **mitsubishi electric automation**

## **Instruction Manual**

**FR-A5ND**  
**DeviceNet™ Communications**  
**Option Unit**  
used with  
**A500(L) Series**  
**Variable Frequency Drive**

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DeviceNetManager is a trademark of Allen-Bradley Company Inc.  
Windows, DOS and other product names may be trademarks or registered trademarks of their respective companies.

## NOTES, CAUTIONS AND WARNINGS

**NOTE:** Notes are used to provide additional detail about a procedure. The Note will always precede the text that the Note refers to.

**CAUTION:** Cautions provide additional detail where failure to observe the Caution may result in damage to the equipment or slight injury to the user.



**WARNING:** Warnings provide additional information, where failure to observe the Warning may result in death or severe injury.



## SAFETY INSTRUCTION

### 1. Electric Shock Prevention

**WARNING:** Do not open or remove the front cover while the Variable Frequency Drive is running. You may get an electrical shock.



- When necessary to perform inspections or when wiring the unit, switch power off and wait at least 10 minutes and until the bus charge light is off. Check for residual voltage.
- Do not attempt to inspect or wire this unit unless fully competent to perform the work.
- Be sure hands are dry before operating any switches.
- Be sure cables do not have scratches, excessive stress, heavy loads or pinching to prevent electrical shock

### 2. Injury Prevention

**CAUTION:** Be sure all connections are in accordance with instructions in this manual



- Check that cables are properly connected before turning equipment on.
- After turning equipment off, wait at least 10 minutes and until the bus charge light is off before removing cover. With cover removed, charged components may be exposed.

## 3. Additional Cautions and Warnings

### CAUTION:



- Do not install the option unit if it is damaged or has parts missing
- Check that option unit is securely fastened to the variable frequency drive.
- Do not stand or rest heavy objects on top of unit.
- Do not allow metal fragments, conductive bodies, oil or other flammable substance to enter the variable frequency drive.
- Before starting operation, confirm and adjust the parameters. Failure to do so may cause the machines to make unexpected motions.
- When parameter clear or all parameter clear is performed, each parameter returns to the factory setting. Reset the required parameters before starting operation
- For prevention of damage caused by static buildup, touch a nearby metal object to remove static from your body.
- Dispose of this product as general industrial waste.

### WARNING:



- Do not modify this equipment

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# 1. INTRODUCTION

## GENERAL

The purpose of this manual is to provide general information, installation, and operation procedures for the FR-A5ND DeviceNet option, used with the FR-A500(L) Variable Frequency Drive, herein after referred to as the VFD. Read this manual completely before installing, operating or servicing the option unit.

This manual is intended for use by qualified personnel. Installation should only be performed by qualified personnel. You must be able to operate and program serial devices to use the equipment.

This option allows the VFD to be connected to a network adhering to the DeviceNet communications protocol.

Illustrations provided in this manual may have covers or safety guards removed to provide a clear view. Before starting operation of the product be sure to install covers and guards into the original position.

The following is a list of important features for the option unit

- Data Rates of 125K baud, 250K baud, and 500K baud.
- Up to 64 stations supported on a single network
- Ability to add or remove stations without disrupting network operation.
- Network access to all VFD parameters, Start/Stop commands, and monitor data.
- Passed ODVA Conformance Test in January, 1998
- Designed and assembled in the U.S.A..

## DESCRIPTION

The FR-A5ND option unit consists of two circuit boards as shown in Figure 1-1. The option unit is mounted in option port #3 on the VFD unit. Two station switches, mounted on the top printed circuit board, allow the assigning of station numbers from 0 to 63. An LED status light mounted next to the DeviceNet connector provides status information on the communication link.

# TOP VIEW

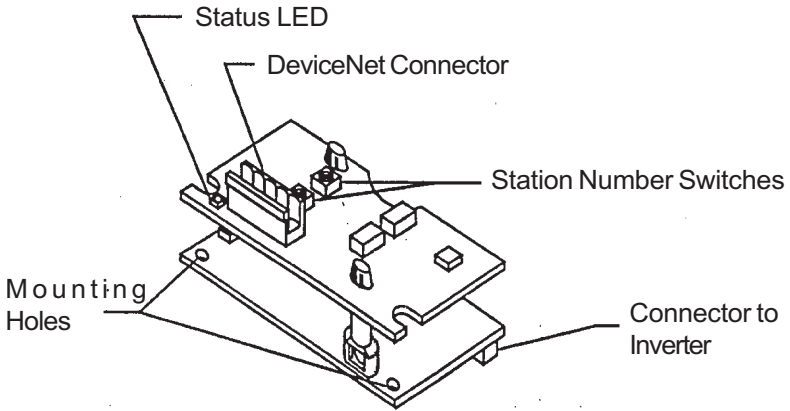
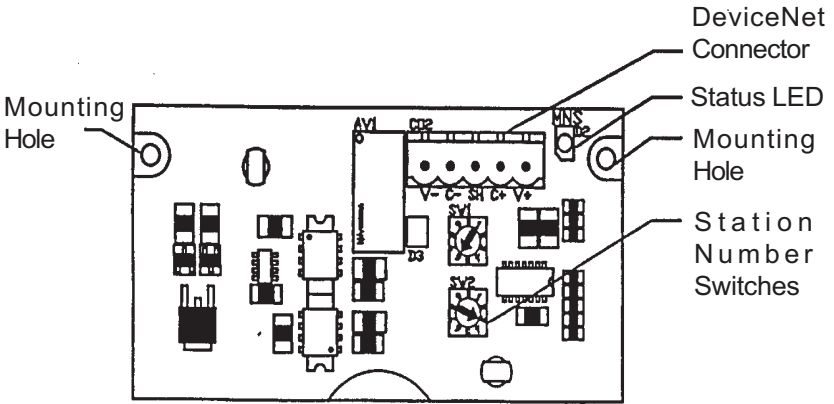


Figure 1-1. FR-A5ND Option Unit



## 2. INSTALLATION

Installation requires the removal of the VFD cover. The VFD top cover must be removed to install the option unit. After installation, the top cover is reinstalled and connection to the DeviceNet bus is completed through a connector accessible through the top cover.

**WARNING:** Cover removal can expose charged components. Be sure the proper procedures are followed when removing cover.

Remove cover following the procedure in the VFD manual.

### 2.1. Pre-Installation checks

Verify that the following included components are supplied.	<ol style="list-style-type: none"> <li>1. FR-A5ND Option Unit</li> <li>2. Two mounting screws M3 x 8 (VSP896M205)</li> <li>3. Instruction Manual</li> </ol>
Verify the VFD type.	<p>This option unit is designed to work with the A500(L) Series Variable Frequency Drive (VFD). Do not attempt to use this unit with any other VFD (e.g. A100, A200, Z, F, and E Series). These models use a different option connector and if the user forces the connector, the VFD may be damaged.</p>
Ensure that the VFD input power is turned off.	<p>The VFD and/or the option unit may be damaged if installed with power on. The VFD performs an initialization procedure at power on that includes checking the option port. Adding the option later causes a hardware conflict which will result in the alarm "E.OP3". And may damage the VFD or option unit.</p>

## 2.2. Installation Procedure

### Mounting Option Unit In VFD Option Port #3.

1. Verify that power has been turned off and that the VFD top cover has been removed.

**NOTE:** The FR-A5ND option unit must be installed in Option Port #3 only. An attempt to install in any other port may cause the VFD or the option unit to be damaged.

2. Using the two mounting holes for alignment reference, carefully insert the option unit connector into the VFD connector as shown in Figure 2-1 and firmly press the unit into place.

**NOTE:** If screw holes in option unit do not line up with the VFD mounting holes, check that connector has been correctly fitted.

3. Secure the option unit to the VFD with the two mounting screws.
4. Option unit is now mechanically installed as shown in Figure 2-2.

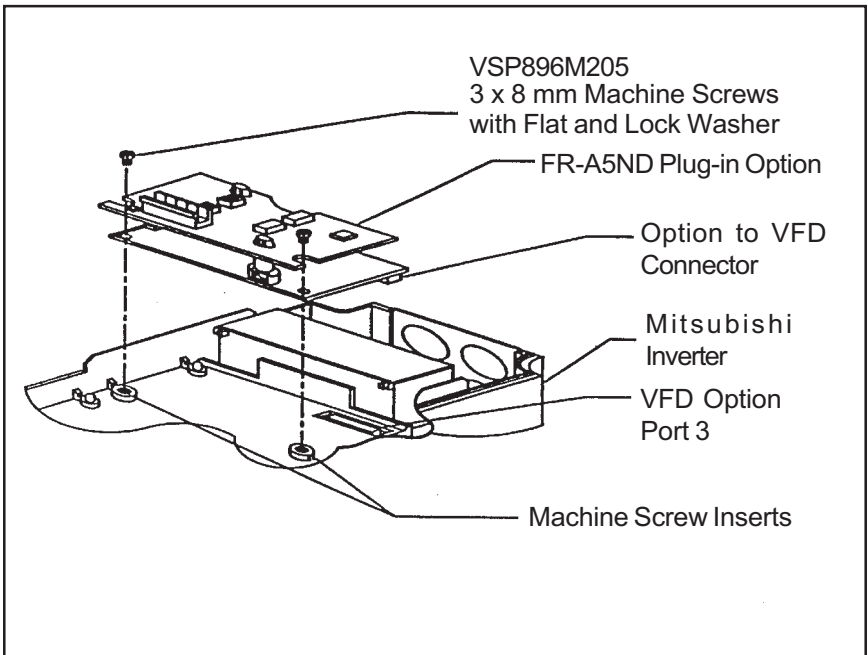
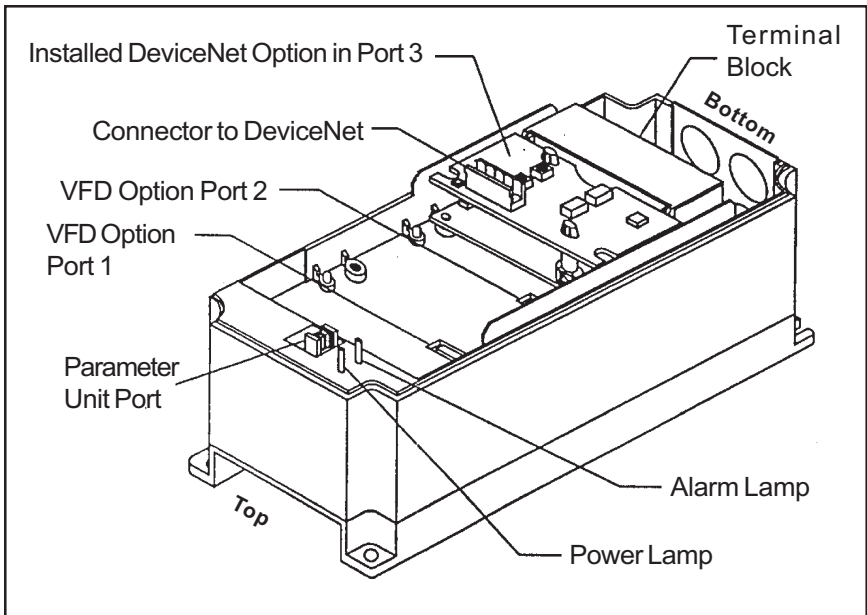


Figure 2-1. Option Unit aligned with Option Port #3



**Figure 2-2. FR-A5ND Option Unit Installed in VFD**

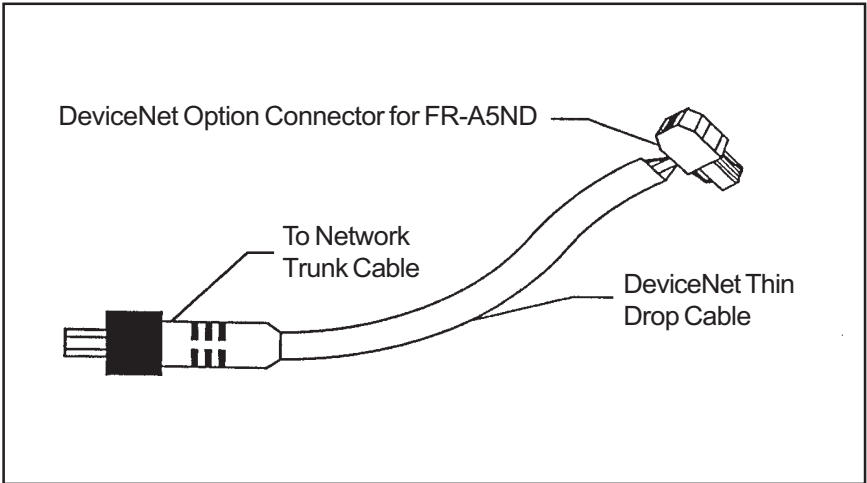
### **Constructing DeviceNet Drop Cable**

A DeviceNet drop cable, Figure 2-3, is used to connect the FR-A5ND option unit to the DeviceNet network. The drop cable consists of an ODVA approved “thin” cable as well as an ODVA approved 5-pin connector that mates with the FR-A5ND DeviceNet Option connector. Another connector compatible with the network’s trunk cable must also be selected by the user/installer. Recommended parts are:

DeviceNet Thin Cable: Belden part number 3084A or equivalent.

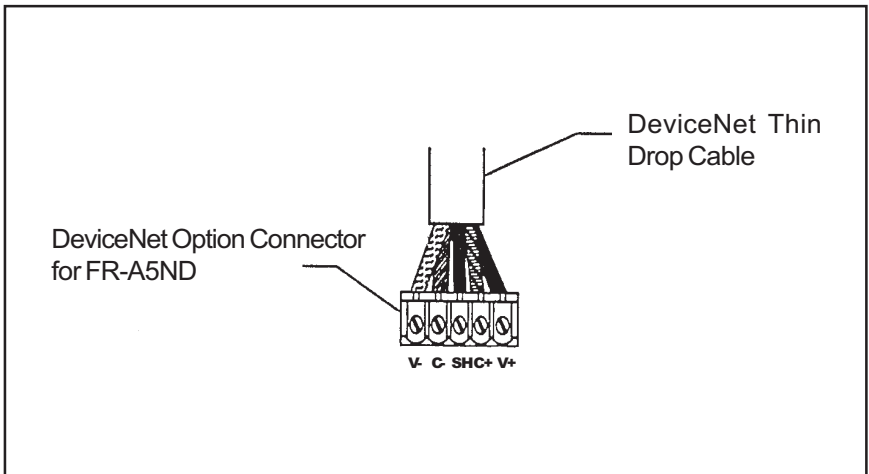
5-Pin Connector for FR-A5ND: Phoenix Contact part number MSTBP 2.5/5-ST-5.08 AB AU SO.

**NOTE:** Maximum length of drop cable must not exceed 20 feet.



**Figure 2-3. DeviceNet Cable**

The DeviceNet option connector pin out connections are shown in Figure 2-4. The function for each pin is listed in Table 2-1.



**Figure 2-4. Connector Pin Out Diagram**

**Table 2-1. Pin Out Functions**

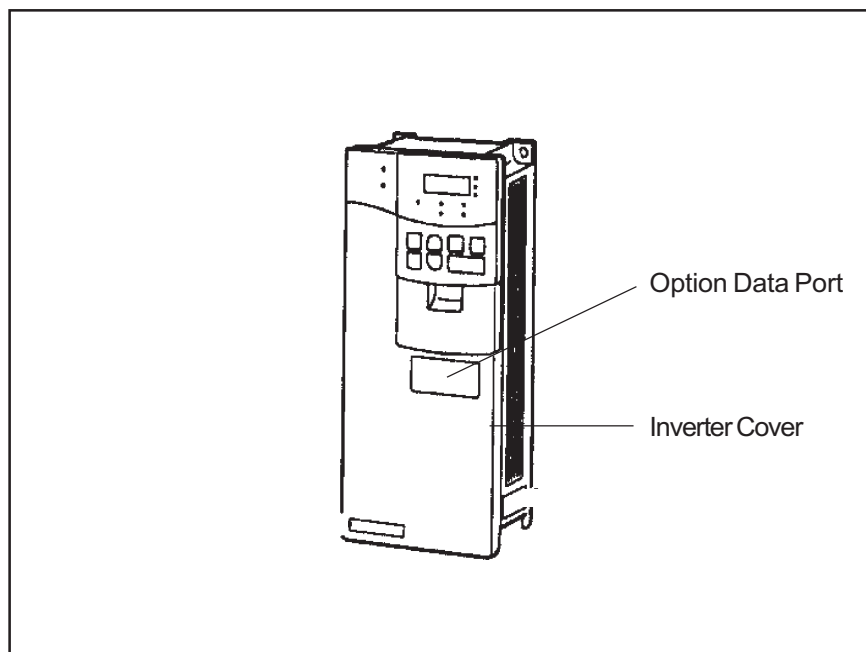
Pin No.	Color	Signal
1	Black	V-
2	Blue	CAN-
3	Bare	Shield
4	White	CAN+
5	Red	V+

1. Strip the insulation and shielding back 1.5 inches on the free wire end of the drop cable to expose the four colored signal wires and the silver shield wire.
2. Strip the insulation back about ¼ inch on the signal wires. And tin each lead with solder.
3. Tin the end of the shield wire to prevent fraying.
4. Attach the connector to the DeviceNet cable as follow:
  - a. Using a flathead screwdriver (3.75 mm maximum width), insert the screwdriver into the upper holes of the connector plug, Figure 2-4, to open the clamps in the lower holes to allow wires to be inserted.
  - b. Install the signal wires into the Phoenix Contact connector plug as shown in Figure 2-4. Be sure to match the wire colors to the correct pin as shown in Table 2-1.
  - c. After all wires are properly inserted, turn the holding screws, Figure 2-4 clockwise to securely clamp the wires. When properly tightened, wires should not be able to be pulled out

## **2.3 Pre Network Connection Procedure**

**NOTE:** Each Device on the network must be assigned a unique station number between the values of 0 to 63

1. Set the two Station number switches , Figure 1-1, for a address between 0 and 63. Any number out of the range of 0 to 63 is automatically changed to 63 by the option unit software.
2. Be sure that the FR-A5ND option unit is snugly inserted into the VFD and the option unit connector is fully and firmly seated before proceeding.
3. Remove the option data port insert, Figure 2-5 from the VFD cover.
4. Reinstall the VFD cover making sure that option port opening is aligned with the DeviceNet connector.
5. Connect the DeviceNet thin drop cable to the VFD by inserting the 5-pin connector through the data port opening, into the DeviceNet standard socket on the option unit.



**Figure 2-5. VFD Data Port**

## 2.4 Connection to Network

At this point the option unit should be installed in the VFD, the address switches properly set, the cable constructed, and the connector connected to the option unit through the option data port.

**CAUTION:** Do not connect cable to the network until told to do so.



1. Check that power is turned off to the VFD.
2. Make sure that the terminating resistor is installed at each end of the trunk cable, as shown in Figure 2-6. These resistors must meet the following requirements:
  - a)  $R = 121$  ohms
  - b) 1% metal film
  - c) 0.25 Watts
3. Connect cable to network as follows:
  - a) If the trunk connector is a DeviceNet sanctioned pluggable or sealed connector, the connection to the active network can be made at any time whether VFD is on or off. The option unit automatically detects when the connection is completed.
  - b) If connecting to the network with free wires, power to the network and VFD should be shut off as a safety precaution in case two or more signal wires are accidentally shorted together.
4. Check that all connections are completed, and all necessary wires not associated with DeviceNet are connected to the VFD unit
5. It is now safe to apply power to the VFD and run it in the PU or external mode.

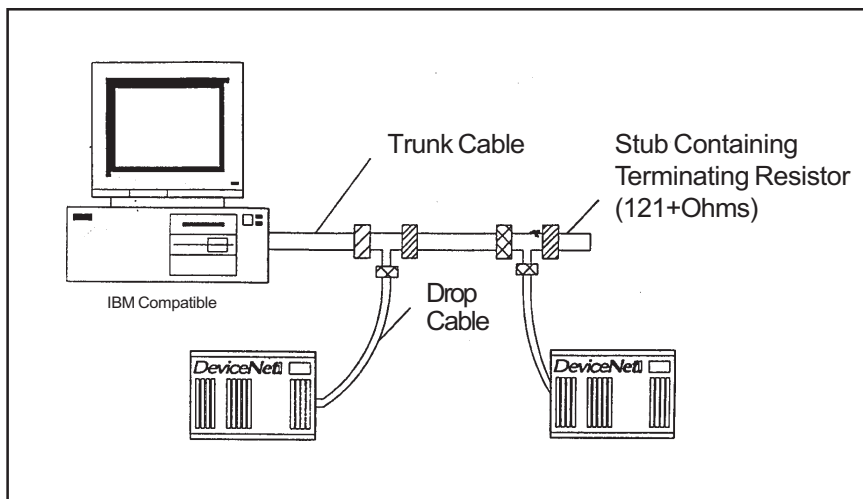


Figure 2-6. Connection to System

## 2.5. Changing Node Addresses

**NOTE:** The state of the address switches is sampled once at power on. Changing the address later on will have no effect and the software will keep the number read at power on.

To change the address switches proceed as follows.

1. Turn power off.
2. Disconnect drop cable from option unit.
3. Remove VFD cover.
4. Set address switches for desired address.
5. Reinstall VFD cover.
6. Reconnect drop cable to VFD option unit.
7. Turn power on.



## 2.6. LED Status Indicator

The LED Status indicator labeled MNS (see Figure 1-1) provides information on the status of operation as shown in Table 2-2. The indicator has five states, Off, Blinking Green, Steady Green, Blinking Red, and Steady Red.

After connecting the drop cable to the trunk of the active network, observe the condition of the Status LED. The option unit uses the Combined Module/ Network status LED scheme described in the DeviceNet communications standard.

**Table 2-2. LED Status**

LED CONDITION	STATE OF SYSTEM	NOTE
Off	Inverter power off Network and Inverter power on	Turn Inverter power on. Option unit will then complete duplicate station number test.
Blinking Green	Connection not yet established by host	The Option unit has powered up successfully and determined that its station number does not conflict with other stations. However, a host has not yet established a communications link.
Steady Green	Network and Inverter power on Connection established by host	A master device on the network has designated the option unit for communications. LED holds this state also during communication.
Blinking Red	Connection time-out	Master designated Option unit for communication (LED green state), but then sent no messages within the time limit set in the expected packet rate. * Check to see that host station has not been disconnected from the network.
Steady Red	Critical link failure	Failed communication device - Duplicate station number - Network power off - Cable from Option unit to network not connected or severed. -Network damaged Must cycle power to recover from this fault.

\* Time Limit = 4 x EPR (Expected Packet Rate)

## 3. GETTING STARTED

### 3.1 Introduction

This section is intended to facilitate the configuration of the FR-A5ND DeviceNet Option with minimum effort. It is assumed that the default values specified in this section are acceptable to the user. If the user wishes to change these values, the data necessary to do so is provided later in the manual.

This section assumes that network cabling is complete and DeviceNet communication has been established. The status LED on the FR-A5ND option should be either blinking green or steady green as described in Table 2-2.

#### 3.1.1 General Description:

The FR-A5ND DeviceNet Option Unit is considered a slave device in the DeviceNet communication standard. This means that the FR-A5ND cannot initiate messages on the network. A master device must establish a connection to the Option Unit and then send commands, requests for information, etc.

The FR-A5ND Option Unit supports Group 3 Messaging as defined in the DeviceNet standard. This feature of the FR-A5ND Option Unit means that it is possible for one master to control the VFD while another reads data from the same VFD. This also means that the DeviceNet master must support the UCMM protocol for proper operation.

3.1.1.1. It is strongly recommended that the user configures the DeviceNet network using a software tool designed specifically for that purpose. The use of such a tool greatly simplifies the configuration, reduces confusion, and enhances accuracy. Additionally, the configuration tool will facilitate the elimination of conflicts between network devices and ensure consistency throughout the network.

One such tool is DeviceNetManager™ as supplied by Rockwell Automation. Tools are available from many other suppliers but the descriptions contained in the Getting Started section are based upon the use of DeviceNetManager™.

3.1.1.2. When adding the FR-A5ND DeviceNet Option Unit to an A500(L) Series VFD that has previously been configured for a specific application, it may be necessary to complete a “Parameter All Clear” (PrClr) instruction in the VFD in order to remove unintentional conflicts and to allow the VFD to recognize the presence of the option card.

If this becomes necessary, you will need to record the existing configuration before issuing the PrClr command as this command will restore factory default values to all VFD parameters. Once the command is completed and the

VFD has recognized the FR-A5ND Option Unit, the VFD configuration data may be re-entered either via the parameter unit or the network.

3.1.1.3. To use the DeviceNetManager™ software, you will need to acquire the DeviceNet Electronic Data Sheet (EDS) file. The EDS file is a standard DeviceNet file which defines the configurable parameters of a field device and facilitates the network configuration software's ability to recognize a specific field device. Please refer to the configuration software tool instruction manual for more information about the installation and use of EDS files.

The most recent revision of the A500(L) EDS file is available on the Internet as well as a separate item from Mitsubishi Electric Automation, Inc. See Appendix A for details on acquiring this file.

## **3.2. Basic Configuration**

### **3.2.1 Set Baud Rate:**

The baud rate must be consistent throughout the network in order to establish communication and allow configuration via the network. Therefore, this step is critical to the success of the FR-A5ND Option Unit's configuration.

3.2.1.1. Upon power-up, the FR-A5ND DeviceNet Option Unit will default to a communication speed of 125 Kbps.

3.2.1.2. The baud rate may be set via the network using "Baud Rate," attribute 2 of DeviceNet Class 0x03, instance 1. See section 6.2.3 for further information.

3.2.1.3. The baud rate may be set manually via the parameter unit by changing Pr345. See section 5.1 for further information.

3.2.1.4. Set Node Address: The station number assigned to the FR-A5ND Option Unit in section 2.3 will determine the default node address upon VFD power-up. If, upon network configuration, an address conflict is found, the Node Address may be set via the using "Node Address," attribute1 of the DeviceNet Class 0x03, instance 1. See section 6.2.3 for further information.

### **3.2.2. DeviceNet I/O Assembly:**

Communication between a master device and a slave device on the network requires that the DeviceNet Class 0x04 – "Assembly Object" in both devices be the same.

3.2.2.1. Default I/O Assembly: Upon power-up, the FR-A5ND Option Unit will default to Class 0x04 – Output Instance 21 and Class 0x04 – Input Instance 71. See Section 6.3 for further information on DeviceNet Class 0x04 and changing the desired Output and Input Instances.

3.2.2.2. Polling Rate: Determination of the proper polling rate of the DeviceNet master device is dependent upon the characteristics of the entire network. To minimize potential conflicts and maximize system reliability, a minimum polling rate interval of 30ms is suggested. The user may, at their discretion, adjust this rate as network performance allows.

### 3.3. Loss of Communications

In the default polled communication mode, the FR-A5ND DeviceNet Option Unit will respond to loss of polling based upon configuration of the Watchdog Timer Action (WDA) bits of parameter 345 (Pr345) as defined in Section 5.1 of this manual. The default value of these bits is decimal 0. Such loss of polling may occur upon physical disconnection of network cabling, network power loss, failure within the master, etc.

When the WDA bits of Pr345 are set to decimal 0, the VFD will continue to execute the last command received until the communication time-out is reached. This time out value is equal to 4 times the Expected Packet Rate (EPR) as configured by the user. Once the FR-A5ND times out, the VFD will generate an E.OP3 error and decelerate to a stop. When the WDA bits of Pr345 are set to decimal 2, the VFD will continue to execute the last command received until another command is issued. The FR-A5ND will ignore the the communication loss, generate no error and automatically reset the connection when communication is restored.

## 4. OPERATION

Operation of the A500(L) changes slightly when the FR-A5ND is installed. These changes are described in the following paragraphs. Parameter definitions including newly created parameters, as well as operation with the FR-A5ND installed are described.

### 4.1 Operation Modes

#### 4.1.1 PU operation mode

Control of the VFD is from the parameter unit (PU).

### 4.1.2 External operation mode

Control of the VFD is by external signals connected to the VFD's terminal block.

### 4.1.3 Network (computer link) operation mode

Control of the VFD is via commands from a DeviceNet master. However, FR-A5ND-specific parameters 338 and 339 can be used to select external control for forward/reverse/stop and output frequency setting.

## 4.2 Operation Mode Selection

The following chart describes the required actions to change the operation mode.

<b>Mode change</b>	<b>Required action</b>
External operation → PU operation	Press PU key on parameter unit
PU operation → external operation	Press EXT key on parameter unit
External operation → network operation	DeviceNet connection is allocated
Network operation → external operation	All DeviceNet connections are released

For all other mode changes, please consult FR-A500(L) Instruction Manual.

The following conditions must also be met before a mode change can be effected:

- VFD is stopped
- Forward and reverse commands are off

Parameter 340 allows selection of network operation mode on power up and after a drive reset.

### 4.3 Functions Available in Operation Modes

The functions of the drive depend on the mode of the drive. The following chart indicates the available commands according to the VFD operation mode.

		Operation mode		
Control type	Command type	Net mode	External mode	PU mode
DeviceNet	Operation command	yes*1	no	no
	Output freq setting	yes*1	no	no
	Monitor	yes	yes	yes
	Parameter write	yes*3 (while stopped)	no*3	no*3
	Parameter read	yes	yes	yes
	Inverter read	yes*2	no	no
External terminals	Operation command	yes*1	yes	no
	Output freq setting	yes*1	yes	no
	Inverter reset	yes	yes	yes

\*1: depends on value of Prs.338 & 339

\*2: VFD can't be reset if computer link comm. error has occurred

\*3: as set in Pr.77

### 4.4 Input from DeviceNet to VFD

#### 4.4.1 Control Input Commands

FR-A5ND supports STF and STR. Some other Control Input Commands are supported as well.

#### 4.4.2 Output Frequency Setting

Output frequency setting is possible for the range 0 to 400 Hz in increments of 0.01 Hz.

### 4.4.3 VFD Reset

VFD can be reset via DeviceNet using Identity Object reset service. Note that this reset service also performs a parameter clear, the type of which depends on the type of the Identity Object reset service. See Sections 6.1.4, 6.6.3 & 6.7.3 for relevant implementations.

### 4.4.4 Parameter Writing

For parameter writing, all standard parameters are supported. In addition, the parameters listed in the Option-specific Parameter section of this specification are supported.

## 4.5 Output from VFD to DeviceNet

### 4.5.1 VFD Status

VFD status can be monitored using class 0x2A, attribute 114, the A500(L) INV Status. This is a bitmapped status byte defined as follows:

Bit	Definition	
0	Running	(RUN)
1	Forward running	(FWD)
2	Reverse running	(REV)
3	Up to frequency	(SU)
4	Overload	(OL)
5	Instantaneous power failure	(IPF)
6	Frequency detection	(FU)
7	Alarm	(ABC)

### 4.5.2 VFD Monitoring

The following items can be monitored:

- output frequency
- output current
- output voltage
- frequency setting

- running speed (RPM)
- motor torque
- converter output voltage
- regenerative brake duty
- electronic overcurrent protection load factor
- output current peak value
- input power
- output power
- input terminal
- output terminal

**NOTE:** Input/Output terminal assignment functions depend on programmed Functions such as brake sequence. Please refer to Section 6.7.3 for more details.

Bit-map for Input Terminal Monitor:

15..12	11	10	9	8	7	6	5	4	3	2	1	0
0	CS	RES	STOP	MRS	JOG	RH	RM	RL	RT	AU	STR	STF

Bit-map for Output Terminal Monitor:

15..6	5	4	3	2	1	0
0	Relay	FU	OL	IPF	SU	RUN

The bit-wise data here reflect Prs190~195, if the assignments for terminals are changed, the bit-map may not be the same.

In the above Bit-maps, 1 means the data is present, 0 means the data is absent.

### 4.5.3 Parameter Read

For parameter reading, all standard parameters are supported. In addition, the parameters listed in the Option-specific Parameter section of this specification are supported.



Some VFD parameters require configuration to be viewed via the PU. All supported parameters are fully accessible regardless of VFD configuration in such cases.

#### 4.6 Operation on Alarm Occurrence

The following table shows the behavior of VFD and network communication operation on alarm occurrence.

		Operation mode		
Type of Fault	Item	Net mode	Ext mode	PU mode
Inverter*3	Inverter Operation	Stop	Stop	Stop
	Network communication	Continue	Continue	Continue
DeviceNet*4 Communication	Inverter Operation	Stop*1	Continue	Continue
	Network communication	Continue*2	Continue*2	Continue*2

\*1: VFD operation stops if A5ND signals option error to drive on expiration of Inactivity/Watchdog timer of Connection Object.

\*2: Depends on the type of communication fault.

\*3: Examples, E.OP3, E.OC1.

\*4: Examples, Blinking Red LED, Red LED.

Please refer to Section 8. Troubleshooting in this manual and Ch.5 Protective Functions in FR-A500(L) Instruction Manual for more details.

#### 4.7 VFD Reset

VFD reset behavior is as noted in Section 4.4.3.

#### 4.8 Setting Frequency (f) Value

To change frequency setting value in RAM, access it by Attr.# 112 & #113 of Class 0x2A AC Drive Object. Please refer to Section 6.7.3.

#### 4.9 Parameter Clear (Pr Clr) Commands

To access various Pr Clr Commands, use Attr.#'s 102 ~ 107 Of Class 0x2A AC Drive Object.

## 4.10 Control Input Commands

To send any Control Input Command to the VFD, use Attr.#114 of Class 0x2A ACDrive Object supplied with the desired Command Data. For example, setting it with value 0x0002 will cause the VFD to run FWD at frequency value set in RAM.

Refer to the following bitmap tables for details:

7	6	5	4	3	2	1	0
RT	JOG	RL	RM	RH	STR	STF	0

15	14	13	12	11	10	9	8
0	0	0	0	0	MRS	CS	AU

## 5. FR-A5ND SPECIFIC PARAMETERS

There are several parameters which are used only when the A5ND is installed in the A500(L). The following sections describe these parameters.

### 5.1 Prs.345 & 346

Pr. No.	Function	Setting Range	Minimum Increment	Default Setting
345	DeviceNet Address Startup Data	0 to 65535	1	41023 (0xA03F)
346	DeviceNet Baudrate Startup Data	0 to 65535	1	20612 (0x5084)

To support the FR-A5ND, two new parameters were created, Prs.345 & 346. They are described below. Use them to override DIP Switch settings, i.e., to do software reset of MAC ID. These are Read-Only parameters from DeviceNet.

The PU displays only in decimal integers. The hexadecimal integers in the parentheses are used here for easy bitmap reference only.

Pr345 is a bitmapped parameter. The definition is as follows:

15	14	13	12	11	10	9
Address Key				WDA		

8	7	6	5	4	3	2	1	0
DN	Fault	Mode*	Device Node			Address		

Pr346 is a bitmapped parameter. The definition is as follows:

15	14	13	12	11	10	9	8	7
Baudrate Key				Input Assy				

6	5	4	3	2	1	0
Output Assy					Baud Rate	

The following table defines each entry.

Name	Description	Semantics	Default Value
Watchdog Timeout Action (WDA)	This value provides the action when no message is sent for more than (4*EPR) period.  (Note) If the WDA is changed using the PU then the change is also modified in the EEPROM. But if the WDA is changed using DeviceNet Class 5 Instance 2 Attribute 12, the change is valid until the next power cycle or system reset occurs.	0, 4 = transition timed out, E.OP3, LED blinking red Keep connection 1, 5 = auto delete E.OP3 LED solid green Polled I/O connection is disconnected 2, 6 = auto reset, No E.OP3 LED solid green Keep connection 3, 7 = WDA is invalid No E.OP3 LED solid green Keep Connection	0
Input Assembly (Note 2)	This value is used in class0x04 input instance.  This value is changed using class0x29 instance 1 attribute 40.	Input Instance ID 0 = 0x46 = 70 1 = 0x47 = 71 6 = 0x4c = 76	1
Output Assembly (Note 2)	This value is used in class0x04 output instance.  This value is changed using class0x29 instance 1 attribute 41.	Output Instance ID 0 = 0x14 = 20 1 = 0x15 = 21 6 = 0x1A = 26	1
Baud Rate	This value provides the Baud Rate.  This value is changed using class0x03 instance 1 attribute 2.	0,3 = 125 kbps 1 = 250 kbps 2 = 500 kbps	0
Device Address (Note 3)	This value provides the Node Address (MAC ID).  This value is changed using class0x03 instance 1 attribute 1.	node address; range is 0 - 63 (same as attribute semantics)	63
Address Key	Internal Validation	1010(Binary)-Preset;None o.w.	1010
Baudrate Key	Internal Validation	0101(Binary)-Preset;None o.w.	0101

Note 1: DN Fault Mode Not supported.

Note 2: Input assembly and output assembly must be matching values.  
When the value except 0, 1 and 6 is set, the value 6 is actually used.

Note 3: Node Address is also changed using Rotary Switch. But the Rotary Switch setting is available only when the Pr.345 setting is 63.

Note 4: When the value other than Preset value are set, A5ND uses default values WDA, Device Node Address, Input Assy, Output Assy, and Baud Rate.

Note 5: These parameter can not be changed using FR-DU04. They are changed using FR-PU04.

Normally, these parameters will not be accessed via the PU. Instead, a DeviceNet user will normally access the various parts of these parameters via DeviceNet and set them according to the table above.

The following tables explain how to set each field for Prs.345 & 346.

**Reference Table For Pr345**

Field	Name	Range	Factor	e.g.1	e.g.2	e.g.3
3	Key	10	4096	10*4096	10*4096	10*4096
2	WDA	0~3	512	0*512	1*512	2*512
1	DFM	0	64	0*64	0*64	0*64
0	Addr	0~63	1	63*1	4*1	10*1
Sum	---	---	---	41023	41476	41994

Enter the Sum into PU by hand, if you do not have a DeviceNet Configuration Tool. In the table above, e.g.1 is the same as default settings, where:

**AddrKey = 1010 (Binary) = 10 only,**  
**WDA = 0,**  
**DFM = 0 only,**  
**NodeAddr = 111111 (Binary) = 63,**  
**Sum = 10\*4096 + 0\*512 + 0\*64 + 63\*1 = 41023.**

**Reference Table For Pr346**

Field	Name	Range	Factor	e.g.1	e.g.2	e.g.3
3	Key	5	4096	5*4096	5*4096	5*4096
2	Inp	0~6	128	1*128	0*128	6*128
1	Outp	0~6	4	1*4	0*4	6*4
0	BR	0~2	1	0*1	1*1	2*1
Sum	---	---	---	20612	20481	21274

Please enter the Sum into PU by hand, if you do not have a DeviceNet Configuration Tool. In the table above, e.g.1 is the same as the default settings, where:

**BRKey = 0101 (Binary) = 5 only,**  
**InputAssy = 1 for Instance 71,**  
**OutputAssy = 1 for Instance 21,**  
**BR = 0 for 125 kbps,**  
**Sum = 5\*4096 + 1\*128 + 1\*4 + 0\*1 = 20612.**

## 5.2 Other Option-Specific Parameters

The following table identifies option-specific parameters which are used for the A5ND. The definition for Pr. 340 is identical to the definitions for use with the previous Mitsubishi communications option unit FR-EPB for FR-A200E.

Pr. No.	Function	Setting Range	Minimum Increment	Default Setting
338	Operation ctrl command source	0, 1	1	0
339	Speed command source	0, 1	1	0
340	Link start-up mode selection	0, 1, 2	1	0

Control Source Selection		Functions													
Pr.338 (control)	Pr.339 (speed ref.)	STF	ST-R	STOP	JOG	RT	2	4	1	RH- RM- RL	A U	RES	MRS	O H	CS
0 (Device Net)	0 (Device Net)	DN	DN	--	--	--	DN	--	aux	--	--	both	ext	ext	ext
0 (Device Net)	1 (External terminal)	DN	DN	--	--	--	ext	ext	ext	ext	ext	both	ext	ext	ext
1 (External terminal)	0 (Device Net)	ext	ext	Ext	ext	ext	DN	--	aux	--	--	both	ext	ext	ext
1 (External terminal)	1 (External terminal)	ext	ext	Ext	ext	ext	ext	ext	ext	ext	ext	both	ext	ext	ext

Below is the definition for Pr. 338 and Pr. 339.

Note: ext - control is via input to external terminal  
 DN - control is via DeviceNet  
 both - control is via either external terminals or DeviceNet  
 '-' - control is via neither external terminals nor DeviceNet  
 aux - control is via input to external terminal when Pr. 28 (multi-speed input compensation) is 1

Definition for Pr340:

Value	Function
0	The VFD always goes to Ext-mode after power-up or INV Reset
1	The VFD always goes to Net-mode after power-up or INV Reset
2	The VFD always goes to Net-mode and keeps previous f setting value automatically after IPF.

## 6. OBJECT MAP

This section describes the object definitions for the FR-A5ND DeviceNet implementation. For details of the definitions, please consult the DeviceNet documentation available from ODVA.

### 6.1 Class 0x01 - Identity Object

#### 6.1.1 Class 0x01 Attributes - Instance 0

#	Access	Attribute	Type	Value
1	Get	Revision	Word	1
2	Get	Maximum Instance	Word	1
6	Get	Maximum Class Attributes	Word	7
7	Get	Maximum Instance Attributes	Word	7

#### 6.1.2 Class 0x01 Services - Instance 0

#	Service
0x0E	Get Attribute Single

**6.1.3 Class 0x01 Instance Attributes - Instance 1**

#	Access	Attribute	Type	Value
1	Get	Vendor ID	Word	82
2	Get	Product Type	Word	02
3	Get	Product Code	Word	500
4	Get	Revision	Word	0001
5	Get	Status	Word	
6	Get	Serial Number	Word	xxxxxxx
7	Get	Name	Word	A500

**6.1.4 Class 0x01 Instance Services - Instance 1**

#	Service	Description
0x05	Reset	0 - Power Cycle 1 - Out of Box*
0x0E	Get Attribute Single	

\* Same as PrAllClr

**6.2 Class 0x03 - DeviceNet Object**

**6.2.1 Class 0x03 Attributes - Instance 0**

None. Not Applicable, Not Related To A500(L).

**6.2.2 Class 0x03 Services - Instance 0**

None. Not Applicable, Not Related To A500(L).



### 6.2.3 Class 0x03 Instance Attributes - Instance 1

#	Access	Attribute	Value
1	Get/Set	Node Address*	
2	Get/Set	Baud Rate*	
3	Get/Set	Bus Off Interrupt	
4	Get/Set	Bus Off Counter	
5	Get	Allocation Information	
8	Get	MAC ID Switch Value	
9	Get	Baud Rate Switch Value	00

\* See also Class 0x67, Attrs.45 & 46.

### 6.2.4 Class 0x03 Instance Services - Instance 1

#	Service
0x4B	Allocate
0x4C	Release
0x0E	Get Attribute Single
0x10	Set Attribute Single

## 6.3 Class 0x04 - Assembly Object

### 6.3.1 Class 0x04 - Output Instance 20

Instance 0x14	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0						Fault Reset		Run Fwd
	1								
	2	Speed Reference (Low Byte)							
	3	Speed Reference (High Byte)							

### 6.3.2 Class 0x04 - Output Instance 21 (Default)

Instance 0x15	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0		Net Ref	NetCtrl			Fault Reset	Run Rev	Run Fwd
	1								
	2	Speed Reference (Low Byte)							
	3	Speed Reference (High Byte)							

### 6.3.3 Class 0x04 - Output Instance 26

Instance 0x1A	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	Write Param	Net Ref	NetCtrl			Fault Reset	Run Rev	Run Fwd
	1	00							
	2	(Low Byte) Speed Ref or Parameter Write Data							
	3	(High Byte) Speed Ref or Parameter Write Data							
	4	Parameter Class							
	5	Parameter Attribute Number							

Output Instance 26 (0x1A) provides write/read parameter access control of the parameter class, the parameter attribute number, and the parameter data for a write operation.

Output Instance 26 **must** be used together with Input Instance 76 in those applications requiring parameter access.

Output Instance 26 utilizes 6 data bytes.

The Output Instance 26 bytes operates in the following manner:

**BYTE 0:**

- Bit 7** - If Write Parameter = 1, the Parameter Write Data is written to the parameter and the rest of the parameter is ignored.
- Bit 7** - If Write Parameter = 0, the Speed Ref in RPM is set, and the rest of the command byte is executed.
- Bit 6** - If NetRef = 1, the Speed Ref is taken from BYTE 2 and BYTE 3.
- Bit 5** - If NetControl = 0, the Speed Ref from the result of the AC Drive parameter settings.
- Bit 4** - Not Used.
- Bit 3** - Not Used.
- Bit 2** - If Fault Reset makes a transition from 0 to 1 then the drive is reset.
- Bit 1** - If Run Rev = 1 and Run Fwd = 0, the drive rotates in the reverse direction.
- Bit 0** - If Run Fwd = 1 and Run Rev = 0, the drive spins in the forward direction.

**Note:** Net Control must = 1 for Bits 2, 1, 0 to have any effect.

**BYTE 1:** Must be zero.

**BYTE 2:** Low Byte of the Speed Ref or Data Value.

**BYTE 3:** High Byte of the Speed Ref or Data Value.

**BYTE 4:** Parameter Class, e.g. 0x2A, 0x66, 0x67.

**BYTE 5:** Parameter Attribute Number, e.g. 0x0A, 0x65.

**6.3.4 Class 0x04 - Input Instance 70**

Instance 0x46	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0						Run(1) Fwd		Faulted
	1								
	2	Speed Actual (Low Byte)							
	3	SpeedActual (High Byte)							

6.3.5 Class 0x04 - Input Instance 71 (Default)

Instance 0x47	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	At Ref Speed	Ref From net	Ctrl From Net	Ready	Run(2) Rev	Run(1) Fwd		Faulted
	1								
	2	Speed Actual (Low Byte)							
	3	SpeedActual (High Byte)							

6.3.6 Class 0x04 - Input Instance 76

Instance 0x4C	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	At Ref Speed	Ref From net	Ctrl From Net	Ready	Run(2) Rev	Run(1) Fwd		Faulted
	1	00							
	2	Speed Actual (Low Byte)							
	3	SpeedActual (High Byte)							
	4	Parameter Read (Low Byte)							
	5	Parameter Read (High Byte)							

The Input Instance 76 (0x4C) provide 16 bits of parameter data.

Input Instance 76 **must** be used together with Output Instance 26 in those applications requiring parameter access.

Input Instance 76 utilizes 6 data bytes.

The Input Instance 76 bytes operates in the following manner:

**BYTE 0:**

**Bit 7** - At Ref Speed - The drive is very close to or at the Ref Speed.

**Bit 6** - Ref From Net - Speed setting comes from the DeviceNet master.

**Bit 5** - Control From Net - Fault Reset, Run Rev, Run Fwd come from the DeviceNet Master.

**Bit 4** - Ready.

**Bit 3** - Run Rev - Drive is rotating in the reverse direction.

**Bit 2** - Run Fwd - Drive is rotating in the forward direction.

**Bit 1** - Not Supported.

**Bit 0** - The drive is in a fault state.

**BYTE 1:** Must be zero.

**BYTE 2:** Low Byte of the Speed Actual.

**BYTE 3:** High Byte of the Speed Actual.

**BYTE 4:** Low Byte of Parameter.

**BYTE 5:** High Byte of Parameter.

For additional information on how to configure the I/O assembly instances, please contact our technical support services.

## **6.4 Class 0x05 - DeviceNet Connection Object**

FR-A5ND supports only Polled I/O and Explicit Msgg, not Bit-Strobed I/O.

### **6.4.1 Class 0x05 Attributes - Instance 0**

None. Not Applicable, Not Related To A500(L).

### **6.4.2 Class 0x05 Services - Instance 0**

None. Not Applicable, Not Related To A500(L).

**6.4.3 Class 0x05 Instance Attributes Instance 1- Explicit Messaging**

#	Access	Attribute	Value
1	Get	State	
2	Get	Instance Type	0
3	Get	Transport Trigger Class	0x83
4	Get	Produced Connection ID	
5	Get	Consumed Connection ID	
6	Get	Initial Comm Characteristics	0x22
7	Get	Produced Connection Size	7
8	Get	Consumed Connection Size	7
9	Get/Set	Expected Pack Rate	
12	Get	Watchdog Action	1
13	Get	Produced Connection Path Length	0
14	Get	Produced Connection Path	
15	Get	Consumed Connection Path Length	0
16	Get	Consumed Connection Path	

Refer to Vol.1:5-4 of DeviceNet Specifications for details.

**6.4.4 Class 0x05 Instance Attributes Instance 2 - Polled I/O**

#	Access	Attribute	Value
1	Get	State	
2	Get	Instance Type	1
3	Get	Transport Trigger Class	0x82
4	Get	Produced Connection ID	
5	Get	Consumed Connection ID	
6	Get	Initial Comm Characteristics	0x21
7	Get	Produced Connection Size	4
8	Get	Consumed Connection Size	4
9	Get/Set	Expected Pack Rate	
12	Get/Set	Watchdog Action	
13	Get/Set	Produced Connection Path Length	3
14	Get/Set	Produced Connection Path	0x62 0x34 0x37
15	Get/Set	Consumed Connection Path Length	3
16	Get/Set	Consumed Connection Path	0x62 0x31 0x35

Refer to Vol.1:5-4 of DeviceNet Specifications for details.

**6.4.5 Class 0x05 Instance Attributes Instance 4- Explicit Messaging**

#	Access	Attribute	Value
1	Get	State	
2	Get	Instance Type	0
3	Get	Transport Trigger Class	0x83
4	Get	Produced Connection ID	
5	Get	Consumed Connection ID	
6	Get	Initial Comm Characteristics	0x22
7	Get	Produced Connection Size	7
8	Get	Consumed Connection Size	7
9	Get/Set	Expected Pack Rate	
12	Get	Watchdog Action	1
13	Get	Produced Connection Path Length	0
14	Get	Produced Connection Path	
15	Get	Consumed Connection Path Length	0
16	Get	Consumed Connection Path	

Refer to Vol.1:5-4 of DeviceNet Specifications for details.



**6.4.6 Class 0x05 Instance Attributes Instance 5- Explicit Messaging**

#	Access	Attribute	Value
1	Get	State	
2	Get	Instance Type	0
3	Get	Transport Trigger Class	0x83
4	Get	Produced Connection ID	
5	Get	Consumed Connection ID	
6	Get	Initial Comm Characteristics	0x22
7	Get	Produced Connection Size	7
8	Get	Consumed Connection Size	7
9	Get/Set	Expected Pack Rate	
12	Get	Watchdog Action	1
13	Get	Produced Connection Path Length	0
14	Get	Produced Connection Path	
15	Get	Consumed Connection Path Length	0
16	Get	Consumed Connection Path	

Refer to Vol.1:5-4 of DeviceNet Specifications for details.

**6.4.7 Class 0x05 Instance Attributes Instance 6- Explicit Messaging**

#	Access	Attribute	Value
1	Get	State	
2	Get	Instance Type	0
3	Get	Transport Trigger Class	0x83
4	Get	Produced Connection ID	
5	Get	Consumed Connection ID	
6	Get	Initial Comm Characteristics	0x22
7	Get	Produced Connection Size	7
8	Get	Consumed Connection Size	7
9	Get/Set	Expected Pack Rate	
12	Get	Watchdog Action	1
13	Get	Produced Connection Path Length	0
14	Get	Produced Connection Path	
15	Get	Consumed Connection Path Length	0
16	Get	Consumed Connection Path	

Refer to Vol.1:5-4 of DeviceNet Specifications for details.

### 6.4.8 Class 0x05 Instance Services - Instances 1,2,4,5,6

#	Service
0x05	Reset
0x0E	Get Attribute Single
0x10	Set Attribute Single

## 6.5 Class 0x28 - Motor Data Object

### 6.5.1 Class 0x28 Attributes - Instance 0

None. Not Applicable, Not Related To A500(L).

### 6.5.2 Class 0x28 Services - Instance 0

None. Not Applicable, Not Related To A500(L).

### 6.5.3 Class 0x28 Instance Attributes Instance 1

#	Access	Attribute	Value
3	Get/Set	Motor Type	7
6	Get/Set	Rated Current, cf. Pr9	
7	Get/Set	Rated Voltage, cf. Pr83	
8	Get/Set	Rated Power, cf Pr84	
9	Get/Set	Rated Frequency, cf. Pr81	
12	Get/Set	Polecount, cf. Pr144	
15	Get/Set	Base Speed, cf. Pr3	

Refer to Vol.II:6-29 of DeviceNet Specifications for details.

**6.5.4 Class 0x28 Instance Services**

#	Service
0x0E	Get Attribute Single
0x10	Set Attribute Single

**6.6 Class 0x29 - Control Supervisor Object**

**6.6.1 Class 0x29 Attributes - Instance 0**

None. Not Applicable, Not Related To A500(L).

**6.6.2 Class 0x29 Services**

None. Not Applicable, Not Related To A500(L).

**6.6.3 Class 0x29 Instance Attributes Instance 1**

#	Access	Attribute	Value
3	Get/Set	Run1	
4	Get/Set	Run2	
5	Get/Set	NetCtrl, cf. Pr338	
6	Get	State	
7	Get	Running1	
8	Get	Running2	
9	Get	Ready	
10	Get	Faulted	
12	Get/Set	FaultRst	
15	Get	CtrlFromNet*	
16	Get/Set	DNFaultMode	
40	Get/Set	Input Assembly	
41	Get/Set	Output Assembly	

Note \*: This data is only updated after INVReset or power cycle. Refer to Vol.II:6-29 of DeviceNet Specifications for details.

### 6.6.4 Class 0x29 Instance Services

#	Service
0x0E	Get Attribute Single
0x10	Set Attribute Single

## 6.7 Class 0x2A - AC Drive Object

### 6.7.1 Class 0x2A Attributes - Instance 0

None. Not Applicable, Not Related To A500(L).

### 6.7.2 Class 0x2A Services

None. Not Applicable, Not Related To A500(L).

### 6.7.3 Class 0x2A Instance Attributes Instance 1

#### AC Profile Compatibles

#	Access	Attribute	Value
1	Get	One	1
3	Get	At Reference	
4	Get/Set	Net Reference, cf. Pr339	
6	Get/Set	Drive Mode	
7	Get	SpeedActual	
8	Get/Set	SpeedRef	
9	Get	Current Actual	
15	Get	Power Actual	
17	Get	Output Voltage	
18	Get/Set	AccelTime, cf. Pr7	
19	Get/Set	DecelTime, cf. Pr8	
20	Get/Set	LowSpeedLimit, cf. Pr2	
21	Get/Set	HighSpeedLimit, cf. Pr1	
29	Get	RefFromNet*	

**This data is updated only after INVRreset or power cycle.**

## MITSUBISHI ELECTRIC AUTOMATION

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The following variables and parameters are vendor-specific, please refer to Mitsubishi FR-A500(L) VFD Instruction Manual, Document# IB(NA) 66790 for more details:

### A500(L) System Environment Variables

#	Access	Attribute	Value
100	Set	Usr Clr Val Sett	9999
101	Set	INV Reset #	0
102	Set	Pr Clr	0x965A
103	Set	Pr All Clr	0x99A
104	Set	Pr Usr Clr	0x5A55
105	Set	Pr Clr (Ex Com Pr)	0x5A96
106	Set	Pr All Clr (Ex Com Pr)	0xAA99
107	Set	Pr Usr Clr (Ex Com Pr)	0x555A
112	Get/Set	Running f (RAM) *	30.00Hz
113	Set	Running f (EEPROM) *	30.00Hz
114	Get/Set	INV Status / Ctrl Inp Cmd	
115	Get/Set	Jog Op f (Sett)	5.00Hz
120	Get/Set	Op Mode / INV Config	

Note \*: Write to #' 112 & 113 can be read out from #112.

#: Please refer to Section 6.10, Item 4 for details.

### A500(L) Real Time Parameters

#	Access	Attribute	Value
141	Get/Set	Alarm History 1 / Alarm History All Clr	0
142	Get	Alarm History 2	
143	Get	Alarm History 3	
144	Get	Alarm History 4	
145	Get	Alarm History 5	
146	Get	Alarm History 6	
147	Get	Alarm History 7	
148	Get	Alarm History 8	
170	Get	Output f (0.01Hz)	
171	Get	Output I (0.01A)	
172	Get	Output V (0.1V)	
174	Get	Freq Sett Val (0.01Hz)	
175	Get	Running Spd (1r/m)	
176	Get	Motor Torq (0.1%)	
177	Get	Convrtr V (0.1V)	
178	Get	Brake Duty (0.1%)	
179	Get	Load Factor (0.1%)	
180	Get	Peak I (0.01A)	
182	Get	Input Power (0.01kW)	
183	Get	Output Power (0.01kW)	
184	Get	Input Terminal *	
185	Get	Output Terminal *	

Note \*: See Section 4.5.2 for bit-maps for i/o terminal monitors.

AH – See next page for Alarm Code vs Alarm #.

**Table Of Alarm # vs Alarm Code**

#	Code	#	Code	#	Code	#	Code
10	OC1	80	GF	D1	OSd	F3	E3
11	OC2	81	LF	D2	ECT	F4	E4
12	OC3	90	OHT	D3	Od	F5	E5
20	OV1	A0	OPT	D4	ECA	F6	E6
21	OV2	A1	OP1	D5	Mb1	F7	E7
22	OV3	A2	OP2	D6	Mb2	F8	E8
30	THT	A3	OP3	D7	Mb3	F9	E9
31	THM	B0	PE	D8	Mb4	FA	E10
40	FIN	B1	PUE	D9	Mb5	FB	E11
41	FAN	B2	RET	DA	Mb6	FC	E12
50	IPF	C0	CPU	DB	Mb7	FD	E13
51	UVT	C1	CTE	F0	E0	FE	E14
60	OLT	C2	P24	F1	E1	FF	E15
70	BE	D0	OS	F2	E2		

Please refer to FR-A500(L) Instruction Manual for explanation of Alarm Codes.

**6.7.4 Class 0x2A Instance Services**

#	Service
0x0E	Get Attribute Single
0x10	Set Attribute Single



## 6.8 Class 0x66 - A500(L) Extended Object I

### 6.8.1 Class 0x66 Attributes - Instance 0

None. Not Applicable, Not Related To A500(L).

### 6.8.2

#### Class 0x66 Services

None. Not Applicable, Not Related To A500(L).

### 6.8.3 Class 0x66 Instance Attributes Instance 1

#### A500(L) Parameters

**(Please refer to A500(L) Instruction Manual for parameter details)**

#	Access	Attribute	Default Value
10	Get/Set	Pr0 Torque Boost (Manual)	(Note 2)
11	Get/Set	Pr1 Maximum Frequency Limit	(Note 2)
12	Get/Set	Pr2 Minimum Frequency Limit	0.00 Hz
13	Get/Set	Pr3 Base Frequency	60.00 Hz
14	Get/Set	Pr4 Multi Speed (Hi)	60.00 Hz
15	Get/Set	Pr5 Multi Speed (mid)	30.00 Hz
16	Get/Set	Pr6 Multi Speed (lo)	10.00 Hz
17	Get/Set	Pr7 Acceleration Time	(Note 2)
18	Get/Set	Pr8 Deceleration Time	(Note 2)
19	Get/Set	Pr9 Electronic Thermal O/L Relay	(Note 2)
20	Get/Set	Pr10 DC Dynamic Brake Operation Frequency	3.00 Hz
21	Get/Set	Pr11 DC Dynamic Brake Operation Time	0.5 Sec
22	Get/Set	Pr12 DC Dynamic Brake Voltage	(Note 2)
23	Get/Set	Pr13 Starting Frequency	0.50 Hz
24	Get/Set	Pr14 Applied Load Selection	0
25	Get/Set	Pr15 Jog Frequency	5.00 Hz
26	Get/Set	Pr16 Jog Acceleration/Deceleration Time	0.5 Sec
27	Get/Set	Pr17 External Thermal Relay Input	0
28	Get/Set	Pr18 High Speed Maximum Frequency Limit	(Note 2)
29	Get/Set	Pr19 Base Frequency Voltage	(Note 3)
30	Get/Set	Pr20 Acceleration/Deceleration Ref Frequency	60.00 Hz
31	Get/Set	Pr21 Acceleration/Deceleration Time Increment*	0
32	Get/Set	Pr22 Stall Prevention Operation	150.0 %
33	Get/Set	Pr23 High Speed Stall Prevent	(Note 3)
34	Get/Set	Pr24 Multi-Speed Setting (4th)	(Note 3)
35	Get/Set	Pr25 Multi-Speed Setting (5th)	(Note 3)

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#	Access	Attribute	Default Value
36	Get/Set	Pr26 Multi-Speed Setting (6th)	(Note 3)
37	Get/Set	Pr27 Multi-Speed Setting (7th)	(Note 3)
38	Get/Set	Pr28 Multi-Speed Input Compensation	0
39	Get/Set	Pr29 Acceleration/Deceleration Pattern	0
40	Get/Set	Pr30 External Brake Resistor	0
41	Get/Set	Pr31 Frequency Jump 1A	(Note 3)
42	Get/Set	Pr32 Frequency Jump 1B	(Note 3)z
43	Get/Set	Pr33 Frequency Jump 2A	(Note 3)
44	Get/Set	Pr34 Frequency Jump 2B	(Note 3)
45	Get/Set	Pr35 Frequency Jump 3A	(Note 3)
46	Get/Set	Pr36 Frequency Jump 3B	(Note 3)
47	Get/Set	Pr37 Speed Display	4
48	Get	Pr38 Special (Note 1)	
49	Get	Pr39 Special (Note 1)	
50	Get	Pr40 Special (Note 1)	
51	Get/Set	Pr41 Up-to-Frequency Sensitivity	10.0
52	Get/Set	Pr42 Output Frequency Detect FWD	6.00 Hz
53	Get/Set	Pr43 Output Frequency Detect REV	(Note 3)
54	Get/Set	Pr44 2nd Acceleration/Deceleration Time	5.0 Sec
55	Get/Set	Pr45 2nd Deceleration Time	(Note 3)
56	Get/Set	Pr46 2nd Torque Boost	(Note 3)
57	Get/Set	Pr47 2nd V/F (base frequency)	(Note 3)
58	Get/Set	Pr48 2nd Stall Prevention Operation Current	150.0 %
59	Get/Set	Pr49 2nd Stall Prevention Operation Frequency	0.00 Hz
60	Get/Set	Pr50 2nd Output Frequency Detection	30.00 Hz
61	Get/Set	Pr51 Special (Note 1)	
62	Get/Set	Pr52 PU Main Display Data Selection	0
63	Get/Set	Pr53 PU Level Display Data Selection	1
64	Get/Set	Pr54 FM Terminal Function Selection	1
65	Get/Set	Pr55 Frequency Monitoring Reference	60.00 Hz
66	Get/Set	Pr56 Current Monitoring Reference	(Note 2)
67	Get/Set	Pr57 Restart Coasting Time	(Note 3)
68	Get/Set	Pr58 Restart Cushion Time	1.0 Sec
69	Get/Set	Pr59 Remote Setting Function	0
70	Get/Set	Pr60 Intelligent Mode Selection	0
71	Get/Set	Pr61 Reference Current for Intelligent Mode	(Note 3)
72	Get/Set	Pr62 Ref. Current for Intelligent Mode Accel.	(Note 3)
73	Get/Set	Pr63 Ref. Current for Intelligent Mode Decel.	(Note 3)

#	Access	Attribute	Default Value
74	Get/Set	Pr64 Starting Frequency for Elevator	(Note 3)
75	Get/Set	Pr65 Retry Selection	0
76	Get/Set	Pr66 Start Prevention Operation	60.00 Hz
77	Get/Set	Pr67 Number of Retries at Alarm	0
78	Get/Set	Pr68 Retry Waiting Time	1.0 Sec
79	Get/Set	Pr69 Retry Count Display Erase	0
80	Get/Set	Pr70 Special Regenerative Brake Duty	0.0 %
81	Get/Set	Pr71 Applied Motor	0
82	Get/Set	Pr72 PWM Frequency Selection	14.5 kHz
83	Get/Set	Pr73 0 to 5v, 0 to 10v Select	1
84	Get/Set	Pr74 Response Time for Analog	1
85	Get/Set	Pr75 Reset Selection	0
86	Get/Set	Pr76 Alarm Code Output Selection	0
87	Get/Set	Pr77 Parameter Write Disable Selection	0
88	Get/Set	Pr78 Reverse Rotation Prevention	0
89	Get/Set	Pr79 Operation Mode Selection	0
90	Get/Set	Pr80 Motor Capacity	(Note 3)
91	Get/Set	Pr81 Number of Motor Poles	(Note 3)
92	Get/Set	Pr82 Excitation Current	(Note 3)
93	Get/Set	Pr83 Rated Motor Voltage	(Note 2)
94	Get/Set	Pr84 Rated Motor Frequency	60.00 Hz
95	Get/Set	Pr85 Special (Note 1)	
96	Get/Set	Pr86 Special (Note 1)	
97	Get/Set	Pr87 Special (Note 1)	
98	Get/Set	Pr88 Special (Note 1)	
99	Get/Set	Pr89 Speed Gain Control	100.0%
100	Get/Set	Pr90 Motor Constant R1	(Note 3)
101	Get/Set	Pr91 Motor Constant R2	(Note 3)
102	Get/Set	Pr92 Motor Constant L1	(Note 3)
103	Get/Set	Pr93 Motor Constant L2	(Note 3)
104	Get/Set	Pr94 Motor Constant X	(Note 3)
105	Get/Set	Pr95 Online Auto Tuning	0
106	Get/Set	Pr96 Auto Tuning Setting/State	0
110	Get/Set	Pr100 V/F 1 (1st Frequency)	(Note 3)

## MITSUBISHI ELECTRIC AUTOMATION

#	Access	Attribute	Default Value
111	Get/Set	Pr101 V/F 1 (1st Frequency Voltage)	0.0V
112	Get/Set	Pr102 V/F 2 (2nd Frequency)	(Note 3)
113	Get/Set	Pr103 V/F 2 (2nd Frequency Voltage)	0.0V
114	Get/Set	Pr104 V/F 3 (3rd Frequency)	(Note 3)
115	Get/Set	Pr105 V/F 3 (3rd Frequency Voltage)	0.0V
116	Get/Set	Pr106 V/F 4 (4th Frequency)	(Note 3)
117	Get/Set	Pr107 V/F 4 (4th Frequency Voltage)	0.0V
118	Get/Set	Pr108 V/F 5 (5th Frequency)	(Note 3)
119	Get/Set	Pr109 V/F 5 (5th Frequency Voltage)	0.0V
120	Get/Set	Pr110 3rd Acceleration/Deceleration Time	(Note 3)
121	Get/Set	Pr111 3rd Deceleration Time	(Note 3)
122	Get/Set	Pr112 3rd Torque Boost	(Note 3)
123	Get/Set	Pr113 3rd V/F (Base Frequency)	(Note 3)
124	Get/Set	Pr114 3rd Stall Prevention Operation Current	150.0%
125	Get/Set	Pr115 3rd Stall Prevention Operation Frequency	0.00Hz
126	Get/Set	Pr116 3rd Output Frequency Detection	(Note 3)
127	Get/Set	Pr117 Station Number.	0
128	Get/Set	Pr118 Comms Speed	192
129	Get/Set	Pr119 Stop Bit Length	1
130	Get/Set	Pr120 Parity Check Presence/Absence	2
131	Get/Set	Pr121 No. Of Comms Retries	1
132	Get/Set	Pr122 Comms Check Time Interval	0.0s
133	Get/Set	Pr123 Waiting Time Setting	(Note 3)
134	Get/Set	Pr124 CR, LF Presence/Absence	1
138	Get/Set	Pr128 PID Action Selection	10
139	Get/Set	Pr129 PID Proportionnal Band	100.0%
140	Get/Set	Pr130 PID Integral Time	1.0s
141	Get/Set	Pr131 PID Upper Limit	(Note 3)
142	Get/Set	Pr132 PID Lower Limit	(Note 3)
143	Get/Set	Pr133 PID Action Set Pointt For PU Operation	0.00%
144	Get/Set	Pr134 PID Differential Time	(Note 3)
145	Get/Set	Pr135CPS- VFD Switch-Over Seq. Output Term. Selection	0
146	Get/Set	Pr136 MC Switch-over Interlock Time	1.0s
147	Get/Set	Pr137 Starting Waiting Time	0.5s
148	Get/Set	Pr138 CPS- VFD Switch-over Selection at Alarm Occur	0
149	Get/Set	Pr139 Auto VFD-CPS Switch-Over Frequency	(Note 3)

#	Access	Attribute	Default Value
150	Get/Set	Pr140 Backlash Acceleration Stopping Freq.	1.00Hz
151	Get/Set	Pr141 Backlash Acceleration Stopping Time	0.5s
152	Get/Set	Pr142 Backlash Deceleration Stopping Freq.	1.00Hz
153	Get/Set	Pr143 Backlash Deceleration Stopping Time	0.5s
155	Get/Set	Pr145 PU Language Selection	0
158	Get/Set	Pr148 Stall Prevention At 0V-Input 1.0%	0
159	Get/Set	Pr149 Stall Prevention At 10V-Input 1.0%	0
160	Get/Set	Pr150 Output Current Detection Level	150.0%
161	Get/Set	Pr151 Output Current Detection Period	0.0s
162	Get/Set	Pr152 Zero-Current Detection Level	5.0%
163	Get/Set	Pr153 Zero-Current Detection Period	0.50s
164	Get/Set	Pr154 Voltage Reduction Selection During Stall Prevention Operation	1
165	Get/Set	Pr155 RT Activated Condition	0
166	Get/Set	Pr156 Stall Prevention Operation Selection	0
167	Get/Set	Pr157 OL Signal Waiting Time	0.0s
168	Get/Set	Pr158 AM Terminal Function Selection	1
172	Get/Set	Pr162 Auto Restart After IPF Selection	0
173	Get/Set	Pr163 1st Cushion Time For Restart	0.0s
174	Get/Set	Pr164 1st Cushion Voltage For Restart	0.0%
175	Get/Set	Pr165 Restart Stall Prevention Operation Level	150.0%
178	Get	Special (Note 1)	
179	Get	Special (Note 1)	
180	Get/Set	Pr170 Watt-HourMeter Clear	0
181	Get/Set	Pr171 Actual Operating Hour Meter Clear	0
183	Get/Set	Pr173 User Group 1 Registration	0
184	Get/Set	Pr174 User Group 1 Deletion	0
185	Get/Set	Pr175 User Group 2 Registration	0
186	Get/Set	Pr176 User Group 2 Deletion	0
190	Get/Set	Pr180 RL Terminal Function Selection	0
191	Get/Set	Pr181 RM Terminal Function Seection	1
192	Get/Set	Pr182 RH Terminal Function Selection	2
193	Get/Set	Pr183 RT Terminal Function Selection	3
194	Get/Set	Pr184 AU Terminal Function Selection	4
195	Get/Set	Pr185 JOG Terminal Function Selection	5
196	Get/Set	Pr186 CS Terminal Function Selection	6

## MITSUBISHI ELECTRIC AUTOMATION

#	Access	Attribute	Default Value
200	Get/Set	Pr190 RUN Terminal Function Selection	0
201	Get/Set	Pr191 SU Terminal Function Selection	1
202	Get/Set	Pr192 IPF Terminal Function Selection	2
203	Get/Set	Pr193 OL Terminal Function Selection	3
204	Get/Set	Pr194 FU Terminal Function Selection	4
205	Get/Set	Pr195 ABC Terminal I Function Selection	99
209	Get/Set	Pr199 User's Initial Value Setting	0
212	Get/Set	Pr232 Multi-Speed Setting (Speed 8)	(Note 3)
213	Get/Set	Pr233 Multi-Speed Setting (Speed 9)	(Note 3)
214	Get/Set	Pr234 Multi-Speed Setting (Speed 10)	(Note 3)
215	Get/Set	Pr235 Multi-Speed Setting (Speed 11)	(Note 3)
216	Get/Set	Pr236 Multi-Speed Setting (Speed 12)	(Note 3)
217	Get/Set	Pr237 Multi-Speed Setting (Speed 13)	(Note 3)
218	Get/Set	Pr238 Multi-Speed Setting (Speed 14)	(Note 3)
219	Get/Set	Pr239 Multi-Speed Setting (Speed 15)	(Note 3)
220	Get/Set	Special (Note 1)	
224	Get/Set	Special (Note 1)	
230	Get/Set	Special (Note 1)	
241	Get/Set	Pr261 Power Failure Stop Function	0
242	Get/Set	Pr262 Subtraction Freq. At Decel. Start	3.00Hz
243	Get/Set	Pr263 Subtraction Starting Frequency	60.00Hz
244	Get/Set	Pr264 Power Failure Deceleration Time 1	5.0s
245	Get/Set	Pr265 Power Failure Deceleration Time 2	(Note 3)
246	Get/Set	Pr266 Pwr Failure Decel. Time Switch-over Freq.	60.00Hz

### Notes

- Parameters marked "Special" should not be changed under normal operating conditions. Improper VFD operation and damage to equipment may occur. Contact technical support for further information
  - Some default values depend on the capacity and voltage class of the VFD.
  - The default values 65535, 6553.5Unit, 655.35Unit simply indicate the function is NOT Active. These settings will be reflected as "9999" when viewed via the VFD parameter unit.
- \* Changing the value will generate the actual effects, but is NOT reflected correctly in DeviceNet Manager.

**6.8.4 Class 0x66 Instance Services**

#	Service
0x0E	Get Attribute Single
0x10	Set Attribute Single

**6.9 Class 0x67 - A500(L) Extended Object II**

**6.9.1 Class 0x67 Attributes - Instance 0**

None. Not Applicable, Not Related To A500(L).

**6.9.2 Class 0x67 Services**

None. Not Applicable, Not Related To A500(L).

**6.9.3 Class 0x67 Instance Attributes Instance 1**

**More A500(L) Parameters**

**(Please refer to the A500(L) VFD Instruction Manual for Details)**

#	A500 Pr	Access	Attribute	Default Value
10	Pr270	Get/Set	Stop-On-Contact / Load Torque Hi-Speed Control Selection	0
11	Pr271	Get/Set	Hi-Speed Setting Maximum Current	50.0%
12	Pr272	Get/Set	Hi-Speed Setting Minimum Current	100.0%
13	Pr273	Get/Set	Current Average Range	(Note 3)
14	Pr274	Get/Set	Current Average Filter Constant	16
15	Pr275	Get/Set	Stop-On-Contact Exciting Current Low-Speed Multiplier Factor	(Note 3)
16	Pr276	Get/Set	Stop-On-Contact PWM Carrier frequency	(Note 3)
18	Pr278	Get/Set	Brake Opening Frequency	3.00Hz
19	Pr279	Get/Set	Brake Opening Current	130.0%
20	Pr280	Get/Set	Brake Opening Current Detection Time	0.3s
21	Pr281	Get/Set	Brake Operating Time At Start	0.3s
22	Pr282	Get/Set	Brake Closing Frequency	6.00Hz
23	Pr283	Get/Set	Brake Oping Time At Stop	0.3s
24	Pr284	Get/Set	Deceleration Detection Function Selection	0
25	Pr285	Get/Set	Overspeed Detection Frequency	(Note 3)
38	Pr338	Get/Set	Op Cmd Source	0
39	Pr339	Get/Set	Speed Cmd Source	
40	Pr340	Get/Set	Link Startup Mode Selection	0
42	Pr342	Get	Special	(Note 1)
45	Pr345	Get	DeviceNet Node Address Data	63
46	Pr346	Get	DeviceNet Baudrate Data	0
67	Pr367	Get/Set	Speed Feedback Range	0
68	Pr368	Get/Set	Feedback Gain	0



### Programmed Operation (Set 1)

#A500	PrAccess	Attribute	Default Value	
100	Pr200	Get/Set	Program Time Unit Selection	0
101	Pr201 Time	Get/Set	Program Setting 1 Time	0.00 Time
102	Pr201 Dir	Get/Set	Program Setting 1 Direction	0
103	Pr201 Freq	Get/Set	Program Setting 1 Frequency	(Note 3)
104	Pr202 Time	Get/Set	Program Setting 2 Time	0.00 Time
105	Pr202 Dir	Get/Set	Program Setting 2 Direction	0
106	Pr202 Freq	Get/Set	Program Setting 2 Frequency	(Note 3)
107	Pr203 Time	Get/Set	Program Setting 3 Time	0.00 Time
108	Pr203 Dir	Get/Set	Program Setting 3 Direction	0
109	Pr203 Freq	Get/Set	Program Setting 3 Frequency	(Note 3)
110	Pr204 Time	Get/Set	Program Setting 4 Time	0.00 Time
111	Pr204 Dir	Get/Set	Program Setting 4 Direction	0
112	Pr204 Freq	Get/Set	Program Setting 4 Frequency	(Note 3)
113	Pr205 Time	Get/Set	Program Setting 5 Time	0.00 Time
114	Pr205 Dir	Get/Set	Program Setting 5 Direction	0
115	Pr205 Freq	Get/Set	Program Setting 5 Frequency	(Note 3)
116	Pr206 Time	Get/Set	Program Setting 6 Time	0.00 Time
117	Pr206 Dir	Get/Set	Program Setting 6 Direction	0
118	Pr206 Freq	Get/Set	Program Setting 6 Frequency	(Note 3)
119	Pr207 Time	Get/Set	Program Setting 7 Time	0.00 Time
120	Pr207 Dir	Get/Set	Program Setting 7 Direction	0
121	Pr207 Freq	Get/Set	Program Setting 7 Frequency	(Note 3)
122	Pr208 Time	Get/Set	Program Setting 8 Time	0.00 Time
123	Pr208 Dir	Get/Set	Program Setting 8 Direction	0
124	Pr208 Freq	Get/Set	Program Setting 8 Frequency	(Note 3)
125	Pr209 Time	Get/Set	Program Setting 9 Time	0.00 Time
126	Pr209 Dir	Get/Set	Program Setting 9 Direction	0
127	Pr209 Freq	Get/Set	Program Setting 9 Frequency	(Note 3)
128	Pr210 Time	Get/Set	Program Setting 10 Time	0.00 Time
129	Pr210 Dir	Get/Set	Program Setting 10 Direction	0
130	Pr210 Freq	Get/Set	Program Setting 10 Frequency	(Note 3)

**Programmed Operation (Set 2)**

#	A500Pr	Access	Attribute	Default Value
131	Pr211 Time	Get/Set	Program Setting 11 Time	0.00 Time
132	Pr211 Dir	Get/Set	Program Setting 11 Direction	0
133	Pr211 Freq	Get/Set	Program Setting 11 Frequency	(Note 3)
134	Pr212 Time	Get/Set	Program Setting 12 Time	0.00 Time
135	Pr212 Dir	Get/Set	Program Setting 12 Direction	0
136	Pr212 Freq	Get/Set	Program Setting 12 Frequency	(Note 3)Hz
137	Pr213 Time	Get/Set	Program Setting 13 Time	0.00 Time
138	Pr213 Dir	Get/Set	Program Setting 13 Direction	0
139	Pr213 Freq	Get/Set	Program Setting 13 Frequency	(Note 3)
140	Pr214 Time	Get/Set	Program Setting 14 Time	0.00 Time
141	Pr214 Dir	Get/Set	Program Setting 14 Direction	0
142	Pr214 Freq	Get/Set	Program Setting 14 Frequency	(Note 3)
143	Pr215 Time	Get/Set	Program Setting 15 Time	0.00 Time
144	Pr215 Dir	Get/Set	Program Setting 15 Direction	0
145	Pr215 Freq	Get/Set	Program Setting 15 Frequency	(Note 3)
146	Pr216 Time	Get/Set	Program Setting 16 Time	0.00 Time
147	Pr216 Dir	Get/Set	Program Setting 16 Direction	0
148	Pr216 Freq	Get/Set	Program Setting 16 Frequency	(Note 3)
149	Pr217 Time	Get/Set	Program Setting 17 Time	0.00 Time
150	Pr217 Dir	Get/Set	Program Setting 17 Direction	0
151	Pr217 Freq	Get/Set	Program Setting 17 Frequency	(Note 3)
152	Pr218 Time	Get/Set	Program Setting 18 Time	0.00 Time
153	Pr218 Dir	Get/Set	Program Setting 18 Direction	0
154	Pr218 Freq	Get/Set	Program Setting 18 Frequency	(Note 3)
155	Pr219 Time	Get/Set	Program Setting 19 Time	0.00 Time
156	Pr219 Dir	Get/Set	Program Setting 19 Direction	0
157	Pr219 Freq	Get/Set	Program Setting 19 Frequency	(Note 3)
158	Pr220 Time	Get/Set	Program Setting 20 Time	0.00 Time
159	Pr220 Dir	Get/Set	Program Setting 20 Direction	0
160	Pr220 Freq	Get/Set	Program Setting 20 Frequency	(Note 3)

**Programmed Operation (Set 3)**

#	A500 Pr	Access	Attribute	Default Value
161	Pr221 Time	Get/Set	Program Setting 21 Time	0.00 Time
162	Pr221 Dir	Get/Set	Program Setting 21 Direction	0
163	Pr221 Freq	Get/Set	Program Setting 21 Frequency	(Note 3)
164	Pr222 Time	Get/Set	Program Setting 22 Time	0.00 Time
165	Pr222 Dir	Get/Set	Program Setting 22 Direction	0
166	Pr222 Freq	Get/Set	Program Setting 22 Frequency	(Note 3)
167	Pr223 Time	Get/Set	Program Setting 23 Time	0.00 Time
168	Pr223 Dir	Get/Set	Program Setting 23 Direction	0
169	Pr223 Freq	Get/Set	Program Setting 23 Frequency	(Note 3)
170	Pr224 Time	Get/Set	Program Setting 24 Time	0.00 Time
171	Pr224 Dir	Get/Set	Program Setting 24 Direction	0
172	Pr224 Freq	Get/Set	Program Setting 24 Frequency	(Note 3)
173	Pr225 Time	Get/Set	Program Setting 25 Time	0.00 Time
174	Pr225 Dir	Get/Set	Program Setting 25 Direction	0
175	Pr225 Freq	Get/Set	Program Setting 25 Frequency	(Note 3)
176	Pr226 Time	Get/Set	Program Setting 26 Time	0.00 Time
177	Pr226 Dir	Get/Set	Program Setting 26 Direction	0
178	Pr226 Freq	Get/Set	Program Setting 26 Frequency	(Note 3)z
179	Pr227 Time	Get/Set	Program Setting 27 Time	0.00 Time
180	Pr227 Dir	Get/Set	Program Setting 27 Direction	0
181	Pr227 Freq	Get/Set	Program Setting 27 Frequency	(Note 3)
182	Pr228 Time	Get/Set	Program Setting 28 Time	0.00 Time
183	Pr228 Dir	Get/Set	Program Setting 28 Direction	0
184	Pr228 Freq	Get/Set	Program Setting 28 Frequency	(Note 3)
185	Pr229 Time	Get/Set	Program Setting 29 Time	0.00 Time
186	Pr229 Dir	Get/Set	Program Setting 29 Direction	0
187	Pr229 Freq	Get/Set	Program Setting 29 Frequency	(Note 3)
188	Pr230 Time	Get/Set	Program Setting 30 Time	0.00 Time
189	Pr230 Dir	Get/Set	Program Setting 30 Direction	0
190	Pr230 Freq	Get/Set	Program Setting 30 Frequency	(Note 3)
191	Pr231	Get/Set	Time of Day Setting	Up Time

**Calibration Functions**

#	A500 Pr	Access	Attribute	Default Value
200	Pr900	Get/Set	FM Terminal Calibration	1359
201	Pr901	Get/Set	AM Terminal Calibration	3522
202	Pr902 Freq	Get/Set	Frequency Voltage Bias - Frequency	0.00 Hz
203	Pr902 %	Get/Set	Frequency Voltage Bias - Percent	0.0 %
204	Pr903 Freq	Get/Set	Frequency Voltage Gain - Frequency	60.00 Hz
205	Pr903 %	Get/Set	Frequency Voltage Gain - Percent	97.0 %
206	Pr904 Freq	Get/Set	Frequency Current Bias - Frequency	0.00 Hz
207	Pr904 %	Get/Set	Frequency Current Bias - Percent	18.8 %
208	Pr905 Freq	Get/Set	Frequency Current Gain - Frequency	60.00 Hz
209	Pr905 %	Get/Set	Frequency Current Gain - Percent	92.7 %

**Notes**

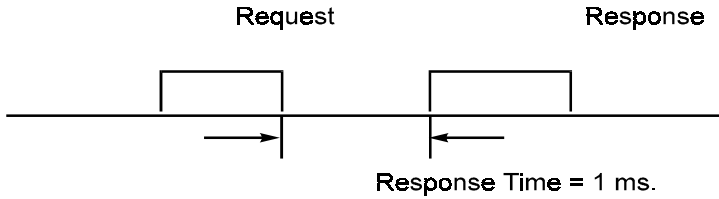
- Parameters marked “Special” should not be changed under normal operating conditions. Improper VFD operation and damage to equipment may occur. Contact technical support for further information
- Some default values depend on the capacity and voltage class of the VFD.
- The default values 65535, 6553.5Unit, 655.35Unit simply indicate the function is NOT Active. These settings will be reflected as “9999” when viewed via the VFD parameter unit.

**6.9.4 Class 0x67 Instance Services**

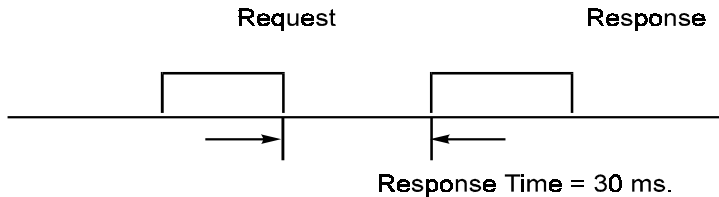
#	Service
0x0E	Get Attribute Single
0x10	Set Attribute Single

## 6.10 Response Timing

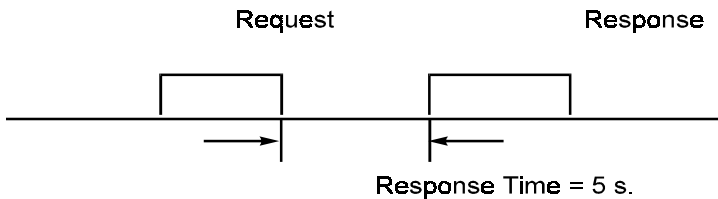
- Item 1. Polling – Reading & Request Without Changing State:  
Explicit Messaging (G2 & G3) – Get-Attribute – Reading Data:



- Item 2. Polling – Writing & Request With Changing State:  
Explicit Messaging (G2 & G3) – Set-Attribute – Writing Data  
(Excluding Items 3 & 4):



- Item 3. PrClr, PrAllClr, PrUsrClr, PrClr(ECP), PrAllClr(ECP), PrUsrClr(ECP):



- Item 4. INV Reset & Pr340 = 0:  
The drive will go to Ext-mode afterwards.

## 6.11 Recommendation For Software Developers

For software developers only:

- Make a handshake procedure, send a request, wait for response, then go to next request.
- Set waiting time between each message based on FR-A5ND specifications above, e.g. for reading set to 1ms each time; for writing set to 30ms each time.

## 7. A500(L) PARAMETERS

no.	Function	A5ND	EDS	COM-MON	Object	Attribute/service	attr id/svc code	Attr/svc name
0	Torque Boost	•	•		A500_66	Attrib	10	
1	Maximum Frequency Limit	•	•	•	ACDrive	Attrib	21	HiSpd Limit
		•	•		A500_66	Attrib	11	
2	Minimum Frequency Limit	•	•	•	ACDrive	Attrib	20	LoSpd Limit
		•	•		A500_66	attrib	12	
3	Base Frequency	•	•	•	MotrData/ ACMotrInst	attrib	9	Rated f
		•	•		A500_66	attrib	13	
4	Multi-Speed Setting (High Speed)	•	•		A500_66	attrib	14	
5	Multi-Speed Setting (Middle Speed)	•	•		A500_66	attrib	15	
6	Multi-Speed Setting (Low Speed)	•	•		A500_66	attrib	16	
7	Acceleration Time	•	•	•	ACDrive	attrib	17	Acc t
		•	•		A500_66	attrib	18	
8	Deceleration Time	•	•	•	ACDrive	attrib	19	Dec t
		•	•		A500_66	attrib	18	
9	Electrical Thermal O/L Relay	•	•		A500_66	attrib	19	
10	DC Dynamic Brake Operation Frequency	•	•		A500_66	attrib	20	
11	DC Dynamic Brake Operation Time	•	•		A500_66	attrib	21	
12	DC Dynamic Brake Voltage	•	•		A500_66	attrib	22	
13	Starting Frequency	•	•		A500_66	attrib	23	
14	Applied Load Selection	•	•		A500_66	attrib	24	
15	Jog Frequency	•	•		A500_66	attrib	25	
16	Jog Acceleration/Deceleration Time	•	•		A500_66	attrib	26	
17	External Thermal Relay Input	•	•		A500_66	attrib	27	
18	High Speed Maximum Frequency Limit	•	•	•	ACDrive	attrib	21	HiSpd Limit
		•	•		A500_66	attrib	28	
19	Base Frequency Voltage	•	•	•	MotrData/ ACMotrInst	attrib	7	Rated V
		•	•		A500_66	attrib	29	
20	Acceleration/Deceleration Reference Frequency	•	•		A500_66	attrib	30	
21	Acceleration/Deceleration Time Increments	•	•		A500_66	attrib	31	
22	Stall Prevention Operation Level	•	•		A500_66	attrib	32	
23	High Speed Stall Prevention Operation Level	•	•		A500_66	attrib	33	
24	Multi-Speed Setting (Speed 4)	•	•		A500_66	attrib	34	
25	Multi-Speed Setting (Speed 5)	•	•		A500_66	attrib	35	
26	Multi-Speed Setting (Speed 6)	•	•		A500_66	attrib	36	
27	Multi-Speed Setting (Speed 7)	•	•		A500_66	attrib	37	

no.	Function	A5ND	EDS	COM-MON	Object	Attribute/ service	attr id/ svc code	Attr/ svc name
28	Multi-Speed Input Compensation	•	•		A500_66	attrib	38	
29	Acceleration/Deceleration Pattern	•	•		A500_66	attrib	39	
30	External Brake Resistor Selection	•	•		A500_66	attrib	40	
31	Frequency Jump 1A	•	•		A500_66	attrib	41	
32	Frequency Jump 1B	•	•		A500_66	attrib	42	
33	Frequency Jump 2A	•	•		A500_66	attrib	43	
34	Frequency Jump 2B	•	•		A500_66	attrib	44	
35	Frequency Jump 3A	•	•		A500_66	attrib	45	
36	Frequency Jump 3B	•	•		A500_66	attrib	46	
37	Speed Display	•	•		A500_66	attrib	47	
38	Special	•	•		A500_66	attrib	48	
39	Special	•	•		A500_66	attrib	49	
40	Special	•	•		A500_66	attrib	50	
41	Up to Frequency Sensitivity	•	•		A500_66	attrib	51	
42	Output Frequency Detection FWD	•	•		A500_66	attrib	52	
43	Output Frequency Detection REV	•	•		A500_66	attrib	54	
44	Second Acceleration/Deceleration Time	•	•		A500_66	attrib	54	
45	Second Deceleration Time	•	•		A500_66	attrib	55	
46	Second Torque Boost	•	•		A500_66	attrib	56	
47	Second V/F (base frequency)	•	•		A500_66	attrib	57	
48	Second Stall Prevention Level (Current)	•	•		A500_66	attrib	58	
49	Second Stall Prevention Level (Frequency)	•	•		A500_66	attrib	59	
50	Second Output Frequency Detection	•	•		A500_66	attrib	60	
51	Special	•	•		A500_66	attrib	61	
52	PU Main Display Data Selection	•	•		A500_66	attrib	62	
53	PU Level Display Data Selection	•	•		A500_66	attrib	63	
54	FM Terminal Function Selection	•	•		A500_66	attrib	64	
55	Frequency Monitoring Reference	•	•		A500_66	attrib	65	
56	Current Monitoring Reference	•	•		A500_66	attrib	66	
57	Coasting Time For Automatic Restart	•	•		A500_66	attrib	67	
58	Automatic Restart Time	•	•		A500_66	attrib	68	
59	Remote Setting Function Selection	•	•		A500_66	attrib	69	
60	Intelligent Mode Selection	•	•		A500_66	attrib	70	
61	Reference Current	•	•		A500_66	attrib	71	
62	Reference Current for Acceleration	•	•		A500_66	attrib	72	
63	Reference Current for Deceleration	•	•		A500_66	attrib	73	
64	Starting Frequency for Elevator Mode	•	•		A500_66	attrib	74	
65	Retry Selection	•	•		A500_66	attrib	75	
66	Stall Prevention Operation Reduction Starting Frequency	•	•		A500_66	attrib	76	
67	Number of Retries at Alarm Occurrence	•	•		A500_66	attrib	77	
68	Retry Waiting Time	•	•		A500_66	attrib	78	

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no.	Function	A5ND	EDS	COM-MON	Object	Attribute/service	attr id/svc code	Attr/svc name
69	Retry Count Display Erasure	•	•		A500_66	attrib	79	
70	Special Regenerative Brake Duty	•	•		A500_66	attrib	80	
71	Applied Motor	•	•		A500_66	attrib	81	
72	PWM Frequency Selection	•	•		A500_66	attrib	82	
73	0 to 5V, 0 to 10V Selection	•	•		A500_66	attrib	83	
74	Input Filter Time Constant	•	•		A500_66	attrib	84	
75	Reset Selection/PU Disconnection Detection	•	•		A500_66	attrib	85	
76	Alarm Code Output Selection	•	•		A500_66	attrib	86	
77	Parameter Write Disable Selection	•	•		A500_66	attrib	87	
78	Reverse Rotation Prevention Selection	•	•		A500_66	attrib	88	
79	Operation Mode Selection	•	•		A500_66	attrib	89	
80	Motor Capacity	•	•		A500_66	attrib	90	
81	Number of Motor Poles	•	•	•	MotrData/ ACMotrInst	attrib	12	Pole Count
		•	•		A500_66	attrib	91	
82	Excitation Current	•			A500_66	attrib	92	
83	Rated Motor Voltage	•	•	•	MotrData/ ACMotrInst	attrib	7	Rated V
		•	•		A500_66	attrib	93	
84	Rated Motor Frequency	•	•	•	MotrData/ ACMotrInst	attrib	9	Rated f
		•	•		A500_66	attrib	94	
85	Special	•	•		A500_66	attrib	95	
86	Special	•	•		A500_66	attrib	96	
87	Special	•	•		A500_66	attrib	97	
88	Special	•	•		A500_66	attrib	98	
89	Speed Control Gain	•	•		A500_66	attrib	99	
90	Motor Constant R1	•	•		A500_66	attrib	100	
91	Motor Constant R2	•	•		A500_66	attrib	101	
92	Motor Constant L1	•	•		A500_66	attrib	102	
93	Motor Constant L2	•	•		A500_66	attrib	103	
94	Motor Constant X	•	•		A500_66	attrib	104	
95	Online Auto Tuning	•	•		A500_66	attrib	105	
96	Auto Tuning Setting/State	•	•		A500_66	attrib	106	
97	Special				A500_66	attrib	107	
98	Special				A500_66	attrib	108	
99	Special				A500_66	attrib	109	
100	V/F 1 (1st Frequency)	•	•		A500_66	attrib	110	
101	V/F 1 (1st Frequency Voltage)	•	•		A500_66	attrib	111	
102	V/F 2 (2nd Frequency)	•	•		A500_66	attrib	112	
103	V/F 2 (2nd Frequency Voltage)	•	•		A500_66	attrib	113	
104	V/F 3 (3rd Frequency)	•	•		A500_66	attrib	114	



no.	Function	A5ND	EDS	COM-MON	Object	Attribute/ service	attr id/ svc code	Attr/ svc name
105	V/F 3 (3rd Frequency Voltage)	•	•		A500_66	attrib	115	
106	V/F 4 (4th Frequency)	•	•		A500_66	attrib	116	
107	V/F 4 (4th Frequency Voltage)	•	•		A500_66	attrib	117	
108	V/F 5 (5th Frequency)	•	•		A500_66	attrib	118	
109	V/F 5 (5th Frequency Voltage)	•	•		A500_66	attrib	119	
110	3rd Acceleration/Deceleration Time	•	•		A500_66	attrib	120	
111	3rd Deceleration Time	•	•		A500_66	attrib	121	
112	3rd Torque Boost	•	•		A500_66	attrib	122	
113	3rd V/F (Base frequency)	•	•		A500_66	attrib	123	
114	3rd Stall Prevention Operating Current	•	•		A500_66	attrib	124	
115	3rd Stall Prevention Operating Frequency	•	•		A500_66	attrib	125	
116	3rd Output frequency Detector	•	•		A500_66	attrib	126	
117	Station Number.	•	•		A500_66	attrib	127	
118	Comms Speed	•	•		A500_66	attrib	128	
119	Stop Bit Length	•	•		A500_66	attrib	129	
120	Parity Check Presence/Absence	•	•		A500_66	attrib	130	
121	No. Of Comms Retries	•	•		A500_66	attrib	131	
122	Comms Chk Time Interval	•	•		A500_66	attrib	132	
123	Waiting Time Setting	•	•		A500_66	attrib	133	
124	CR, LF Presence / Absence Selection	•	•		A500_66	attrib	134	
128	PID Action Selection	•	•		A500_66	attrib	138	
129	PID Proportional Band	•	•		A500_66	attrib	139	
130	PID Integral Time	•	•		A500_66	attrib	140	
131	PID Upper Limit	•	•		A500_66	attrib	141	
132	PID Lower Limit	•	•		A500_66	attrib	142	
133	PID Action Set Point For PU Operation	•	•		A500_66	attrib	143	
134	PID Differential Time	•	•		A500_66	attrib	144	
135	CPS-VFD Switch-Over Sequence Output Terminal Selection	•	•		A500_66	attrib	145	
136	MC Switch-Over Interlock Time	•	•		A500_66	attrib	146	
137	Start Waiting Time	•	•		A500_66	attrib	147	
138	CPS-VFD Switch-Over Selection At Alarm Occur	•	•		A500_66	attrib	148	
139	Auto VFD-CPS Switch-Over Frequency	•	•		A500_66	attrib	149	
140	Backlash Acceleration Stopping Frequency	•	•		A500_66	attrib	150	
141	Backlash Acceleration Stopping Time	•	•		A500_66	attrib	151	
142	Backlash Deceleration Stopping Frequency	•	•		A500_66	attrib	152	
143	Backlash Deceleration Stopping Time	•	•		A500_66	attrib	153	
145	PU Language Switch-Over	•	•		A500_66	attrib	155	
148	Stall Prevention At 0V Inp	•	•		A500_66	attrib	158	

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no.	Function	A5ND	EDS	COM-MON	Object	Attribute/ service	attr id/ svc code	Attr/ svc name
149	Stall Prevention At 10V Input	•	•		A500_66	Attrib	159	
150	Output Current Detection Level	•	•		A500_66	attrib	160	
151	Output Current Detection Period	•	•		A500_66	attrib	161	
152	Zero Current Detection Level	•	•		A500_66	attrib	162	
153	Zero Current Detection Period	•	•		A500_66	attrib	163	
154	Voltage Reduction Selection During Stall Prevention Operation	•	•		A500_66	attrib	164	
155	RT Activated Condition	•	•		A500_66	attrib	165	
156	Stall Prevention Operating Selection	•	•		A500_66	attrib	166	
157	OL Signal Waiting Time	•	•		A500_66	attrib	167	
158	AM Terminal Function Selection	•	•		A500_66	attrib	168	
162	Auto Restart After IPF Selection	•	•		A500_66	attrib	172	
163	1st Cushion Time For Restart	•	•		A500_66	attrib	173	
164	1st Cushion Voltage For Restart	•	•		A500_66	attrib	174	
165	Restart Stall Prevention Operating Level	•	•		A500_66	attrib	175	
168	Reserved	•	•		A500_66	attrib	178	
169	Reserved	•	•		A500_66	attrib	179	
170	Watt-Hour Meter Clear	•	•		A500_66	attrib	180	
171	Actual Operating Hour Meter Clear	•	•		A500_66	attrib	181	
173	User Group 1 Registration	•	•		A500_66	attrib	183	
174	User Group 1 Deletion	•	•		A500_66	attrib	184	
175	User Group 2 Registration	•	•		A500_66	attrib	185	
176	User Group 2 Deletion	•	•		A500_66	attrib	186	
180	RL Termnl Function Selection	•	•		A500_66	attrib	190	
181	RM Termnl Function Selection	•	•		A500_66	attrib	191	
182	RH Termnl Function Selection	•	•		A500_66	attrib	192	
183	RT Termnl Function Selection	•	•		A500_66	attrib	193	
184	AU Termnl Function Selection	•	•		A500_66	attrib	194	
185	JOG Termnl Function Selection	•	•		A500_66	attrib	195	
186	CS Termnl Function Selection	•	•		A500_66	attrib	196	
190	RUN Termnl Function Selection	•	•		A500_66	attrib	200	
191	SU Termnl Function Selection	•	•		A500_66	attrib	201	
192	IPF Termnl Function Selection	•	•		A500_66	attrib	202	
193	OL Termnl Function Selection	•	•		A500_66	attrib	203	
194	FU Termnl Function Selection	•	•		A500_66	attrib	204	
195	ABC Termnl Function Selection	•	•		A500_66	attrib	205	
199	Usr's Initial Value Setting	•	•		A500_66	attrib	209	

no.	Function	A5ND	EDS	COM-MON	Object	Attribute/ service	attr id/ svc code	Attr/ svc name
200	PRG Time Select	•	•		A500_67	attrib	100	
201	PRG Time 1 Setting	•	•		A500_67	attrib	101	
	PRG Direction 1 Setting	•	•		A500_67	attrib	102	
	PRG Frequency 1 Setting	•	•		A500_67	attrib	103	
202	PRG Time 2 Setting	•	•		A500_67	attrib	104	
	PRG Direction 2 Setting	•	•		A500_67	attrib	105	
	PRG Frequency 2 Setting	•	•		A500_67	attrib	106	
203	PRG Time 3 Setting	•	•		A500_67	attrib	107	
	PRG Direction 3 Setting	•	•		A500_67	attrib	108	
	PRG Frequency 3 Setting	•	•		A500_67	attrib	109	
204	PRG Time 4 Setting	•	•		A500_67	attrib	110	
	PRG Direction 4 Setting	•	•		A500_67	attrib	111	
	PRG Frequency 4 Setting	•	•		A500_67	attrib	112	
205	PRG Time 5 Setting	•	•		A500_67	attrib	113	
	PRG Direction 5 Setting	•	•		A500_67	attrib	114	
	PRG Frequency 5 Setting	•	•		A500_67	attrib	115	
206	PRG Time 6 Setting	•	•		A500_67	attrib	116	
	PRG Direction 6 Setting	•	•		A500_67	attrib	117	
	PRG Frequency 6 Setting	•	•		A500_67	attrib	118	
207	PRG Time 7 Setting	•	•		A500_67	attrib	119	
	PRG Direction 7 Setting	•	•		A500_67	attrib	120	
	PRG Frequency 7 Setting	•	•		A500_67	attrib	121	
208	PRG Time 8 Setting	•	•		A500_67	attrib	122	
	PRG Direction 8 Setting	•	•		A500_67	attrib	123	
	PRG Frequency 8 Setting	•	•		A500_67	attrib	124	
209	PRG Time 9 Setting	•	•		A500_67	attrib	125	
	PRG Direction 9 Setting	•	•		A500_67	attrib	126	
	PRG Frequency 9 Setting	•	•		A500_67	attrib	127	
210	PRG Time 10 Setting	•	•		A500_67	attrib	128	
	PRG Direction 10 Setting	•	•		A500_67	attrib	129	
	PRG Frequency 10 Setting	•	•		A500_67	attrib	130	
211	PRG Time 11 Setting	•	•		A500_67	attrib	131	
	PRG Direction 11 Setting	•	•		A500_67	attrib	132	
	PRG Frequency 11 Setting	•	•		A500_67	attrib	133	
212	PRG Time 12 Setting	•	•		A500_67	attrib	134	
	PRG Direction 12 Setting	•	•		A500_67	attrib	135	
	PRG Frequency 12 Setting	•	•		A500_67	attrib	136	
213	PRG Time 13 Setting	•	•		A500_67	attrib	137	
	PRG Direction 13 Setting	•	•		A500_67	attrib	138	
	PRG Frequency 13 Setting	•	•		A500_67	attrib	139	

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no.	Function	A5ND	EDS	COM-MON	Object	Attribute/ service	attr id/ svc code	Attr/ svc name
214	PRG Time 14 Setting	•	•		A500_67	attrib	140	
	PRG Direction 14 Setting	•	•		A500_67	attrib	141	
	PRG Frequency 14 Setting	•	•		A500_67	attrib	142	
215	PRG Time 15 Setting	•	•		A500_67	attrib	143	
	PRG Direction 15 Setting	•	•		A500_67	attrib	144	
	PRG Frequency 15 Setting	•	•		A500_67	attrib	145	
216	PRG Time 16 Setting	•	•		A500_67	attrib	146	
	PRG Direction 16 Setting	•	•		A500_67	attrib	147	
	PRG Frequency 16 Setting	•	•		A500_67	attrib	148	
217	PRG Time 17 Setting	•	•		A500_67	attrib	149	
	PRG Direction 17 Setting	•	•		A500_67	attrib	150	
	PRG Frequency 17 Setting	•	•		A500_67	attrib	151	
218	PRG Time 18 Setting	•	•		A500_67	attrib	152	
	PRG Direction 18 Setting	•	•		A500_67	attrib	153	
	PRG Frequency 18 Setting	•	•		A500_67	attrib	154	
219	PRG Time 19 Setting	•	•		A500_67	attrib	155	
	PRG Direction 19 Setting	•	•		A500_67	attrib	156	
	PRG Frequency 19 Setting	•	•		A500_67	attrib	157	
220	PRG Time 20 Setting	•	•		A500_67	attrib	158	
	PRG Direction 20 Setting	•	•		A500_67	attrib	159	
	PRG Frequency 20 Setting	•	•		A500_67	attrib	160	
221	PRG Time 21 Setting	•	•		A500_67	attrib	161	
	PRG Direction 21 Setting	•	•		A500_67	attrib	162	
	PRG Frequency 21 Setting	•	•		A500_67	attrib	163	
222	PRG Time 22 Setting	•	•		A500_67	attrib	164	
	PRG Direction 22 Setting	•	•		A500_67	attrib	165	
	PRG Frequency 22 Setting	•	•		A500_67	attrib	166	
223	PRG Time 23 Setting	•	•		A500_67	attrib	167	
	PRG Direction 23 Setting	•	•		A500_67	attrib	168	
	PRG Frequency 23 Setting	•	•		A500_67	attrib	169	
224	PRG Time 24 Setting	•	•		A500_67	attrib	170	
	PRG Direction 24 Setting	•	•		A500_67	attrib	171	
	PRG Frequency 24 Setting	•	•		A500_67	attrib	172	
225	PRG Time 25 Setting	•	•		A500_67	attrib	173	
	PRG Direction 25 Setting	•	•		A500_67	attrib	174	
	PRG Frequency 25 Setting	•	•		A500_67	attrib	175	
226	PRG Time 26 Setting	•	•		A500_67	attrib	176	
	PRG Direction 26 Setting	•	•		A500_67	attrib	177	
	PRG Frequency 26 Setting	•	•		A500_67	attrib	178	
227	PRG Time 27 Setting	•	•		A500_67	attrib	179	
	PRG Direction 27 Setting	•	•		A500_67	attrib	180	
	PRG Frequency 27 Setting	•	•		A500_67	attrib	181	

no.	Function	A5ND	EDS	COM-MON	Object	Attribute/ service	attr id/ svc code	Attr/ svc name
228	PRG Time 28 Setting	•	•		A500_67	attrib	182	
	PRG Direction 28 Setting	•	•		A500_67	attrib	183	
	PRG Frequency 28 Setting	•	•		A500_67	attrib	184	
229	PRG Time 29 Setting	•	•		A500_67	attrib	185	
	PRG Direction 29 Setting	•	•		A500_67	attrib	186	
	PRG Frequency 29 Setting	•	•		A500_67	attrib	187	
230	PRG Time 30 Setting	•	•		A500_67	attrib	188	
	PRG Direction 30 Setting	•	•		A500_67	attrib	189	
	PRG Frequency 30 Setting	•	•		A500_67	attrib	190	
231	Time of Day Setting	•	•		A500_67	attrib	191	
232	Multi-Speed Setting (Speed 8)	•	•		A500_66	attrib	212	
233	Multi-Speed Setting (Speed 9)	•	•		A500_66	attrib	213	
234	Multi-Speed Setting (Speed 10)	•	•		A500_66	attrib	214	
235	Multi-Speed Setting (Speed 11)	•	•		A500_66	attrib	215	
236	Multi-Speed Setting (Speed 12)	•	•		A500_66	attrib	216	
237	Multi-Speed Setting (Speed 13)	•	•		A500_66	attrib	217	
238	Multi-Speed Setting (Speed 14)	•	•		A500_66	attrib	218	
239	Multi-Speed Setting (Speed 15)	•	•		A500_66	attrib	219	
240	Special	•	•		A500_66	attrib	220	
244	Special	•	•		A500_66	attrib	224	
250	Special	•	•		A500_66	attrib	250	
261	Power Failure Stop Function	•	•		A500_66	attrib	241	
262	Subtracted Frequency At Deceleration Start	•	•		A500_66	attrib	242	
263	Subtracted Starting Frequency	•	•		A500_66	attrib	243	
264	Power-Failure Deceleration Time 1	•	•		A500_66	attrib	244	
265	Power Failure Deceleration Time 2	•	•		A500_66	attrib	245	
266	Power Failure Deceleration Time Switch-Over Frequency	•	•		A500_66	attrib	246	
270	Stop-On-Contact / Load Torque Hi-Speed Control Selection	•	•		A500_67	attrib	10	
271	High-Speed Setting Maximum Current	•	•		A500_67	attrib	11	
272	Minimum-Speed Setting Minimum Current	•	•		A500_67	attrib	12	
273	Current Average Range	•	•		A500_67	attrib	13	
274	Current Average Filter Constant	•	•		A500_67	attrib	14	
275	Stop-On-Contact Excitg Current Low-Speed Multiplier Factor	•	•		A500_67	attrib	15	
276	Stop-On-Contact PWM Carrier Frequency	•	•		A500_67	attrib	16	
277	Special	•	•		A500_67	attrib	17	
278	Brake Opening Frequency	•	•		A500_67	attrib	18	

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no.	Function	A5ND	EDS	COM-MON	Object	Attribute/ service	attr id/ svc code	Attr/ svc name
279	Brake Opening Current	•	•		A500_67	attrib	19	
280	Brake Opening Current Detection Time	•	•		A500_67	attrib	20	
281	Brake Operating Time At Start	•	•		A500_67	attrib	21	
282	Brake Closing Frequency	•	•		A500_67	attrib	22	
283	Brake Operating Time At Stop	•	•		A500_67	attrib	23	
284	Deceleration Detection Function Selection	•	•		A500_67	attrib	24	
285	Overspeed Detection Frequency	•	•		A500_67	attrib	25	
338	Operation Cmd Source	•	•		A500_67	attrib	38	
339	Speed Cmd Source	•	•		A500_67	attrib	39	
340	Link Startup Mode Selectionn	•	•		A500_67	attrib	40	
342	Special	•	•		A500_67	attrib	42	
345	DeviceNet Node Address Data	•	•		A500_67	attrib	45	
346	DeviceNet Baudrate Data	•	•		A500_67	attrib	46	
367	Special	•	•		A500_67	attrib	67	
368	Special	•	•		A500_67	attrib	68	
900	FM terminal calibration	•	•		A500_67	attrib	200	
901	AM terminal calibration	•	•		A500_67	attrib	201	
902	Frequency Voltage Bias (Frequency)	•	•		A500_67	attrib	202	
	Frequency Voltage Bias (%)	•	•		A500_67	attrib	203	
903	Frequency Voltage Gain (Frequency)	•	•		A500_67	attrib	204	
	Frequency Voltage Gain (%)	•	•		A500_67	attrib	205	
904	Frequency Current Bias (Frequency)	•	•		A500_67	attrib	206	
	Frequency Current Bias (%)	•	•		A500_67	attrib	207	
905	Frequency Current Gain (Frequency)	•	•		A500_67	attrib	208	
	Frequency Current Gain (%)	•	•		A500_67	attrib	209	
	User Clear Value Setting	•	•		ACDrive	attrib	100	
	VFD Reset	•	•		ACDrive	attrib	101	
	Parameter Clear	•	•		ACDrive	attrib	102	
	Parameter All Clear	•	•		ACDrive	attrib	103	
	Parameter User Clear	•	•		ACDrive	attrib	104	
	Parameter Clear (Ex Com Pr)	•	•		ACDrive	attrib	105	
	Parameter All Clear (Ex Com Pr)	•	•		ACDrive	attrib	106	
	Parameter User Clear (Ex Com Pr)	•	•		ACDrive	attrib	107	
	Running Frequency (RAM)	•	•		ACDrive	attrib	112	
	Running Frequency (EEPROM)	•	•		ACDrive	attrib	113	
	VFD Status / Control Input Cmd	•	•		ACDrive	attrib	114	
	Jog Operating Frequency (Setting)	•	•		ACDrive	attrib	115	
	Op Mode/ VFD Configuration	•	•		ACDrive	attrib	120	
	Alarm History 1 / Alarm History All Clear	•	•		ACDrive	attrib	141	

## 8. TROUBLESHOOTING

If a fault occurs and the VFD fails to operate properly, locate the cause of the fault and take proper corrective action by referring to the troubleshooting below. If the corresponding information is not found in the table, the VFD has problem, or the component parts are damaged, contact the nearest service representative.

### 8.1. Inspecting Display On Parameter Unit And MNS Status LED On A5ND

In response to the occurrence of a fault, the display unit of the VFD automatically displays the code of the detected fault and MNS Status LED on A5ND shows the status of the detected fault.

Display		Possible Causes	Check	Corrective Action
A500 (L)	LED On A5ND			
E.OP3	Blinking Red	Connection time-out, Master designated A5ND for communication, but sent no msgs within time limit = 4*EPR.	Host station has not been disconnected from network.	Reset the Inverter. Reconnect the network. Master is up and running. Master sends msgs within time limit.
0.00	Off	No good contact between A500(L) and A5ND.	A5ND was not plugged in firmly.	Follow the instructions in Section 2, plug in A5ND firmly.
0.00	Red	Duplicate station number; Network power off; Network caable offline; A5ND is only node, not even a Master is present. Network is damaged.	No duplicate station numbers; Network power on; No damage to network; All cables are in proper connection; Master is on network.	Check required items at left box, Reset the Inverter, Restart the network.

## 9. REFERENCES

- Mitsubishi     ***FR-A500(L) VFD Instruction Manual***  
                  Document# IB (NA) 66790
- Mitsubishi     ***Electronic Data Sheet Instruction Manual***  
                  Document# VC7BNA00011
- ODVA           ***DeviceNet Specifications,    Release 2.0***

For additional help please contact Mitsubishi Electric Automation, Inc.  
Technical Support at (800) 950-7781



## 10. SPECIFICATIONS

- |                               |   |  |
|-------------------------------|---|--|
| 1) Power supply               | · | Control power: supplied by the VFD.  |
|                               | · | Communication power: supplied by DeviceNet power supply, 11 to 28 V with a 10 A capacity   |
| 2) Standard                   | · | Conforms to ODVA DeviceNet Specification Release 2.0 (independently tested by University of Michigan test lab, January, 1998); supports UCMM |
| 3) Network topology           | · | DeviceNet (linear bus with drop lines)   |
| 4) Transmission Media         | · | DeviceNet standard thick or thin cable   |
| 5) Maximum cable distance     | · | 500m at 125k baud with thick cable (see DeviceNet specification for details on maximum cable distance for different baud rates)              |
| 6) Transmission speed         | · | 125kbps, 250kbps, 500kbps  |
| 7) Number of VFDs connectable | · | 63 VFDs with minimum of one node as a master   |
| 8) Supported VFDs             | · | FR-A500(L)   |
| 9) Dimension                  | · | 96 x 49 x 33 mm  |
| 10) Environmental             |   |  |

Ambient temperature	-10 to 50°C (non-condensing)
Ambient humidity	90% or less (non-condensing)
Vibration	0.6G or less, conforming to JIS-C0912
Protective structure	Open type (IP00), JEM1030

## **Appendix A.**

### Electronic Data Sheets (EDS files)

The EDS file for the A500(L) series of VFD is available in two ways.

- 1) Download free of charge from the Open DeviceNet Vendors Association web site at <http://www.odva.org>
- 2) Purchase Mitsubishi part number A500(L).EDS. Contact your local distributor or MEAU Sales Office for details.

The A500(L).EDS file has been constructed to ODVA standards and has been verified for use with DeviceNetManager™ as provided by Rockwell Automation. Please consult your DeviceNet configuration software instruction manual for the proper installation of the EDS file.

## REVISIONS

\* The manual number is given on the bottom left of the back cover.

Print Date	*Manual Number	Revision
Jan. 1998	VC7BNA00009A	first edition
Sep. 1998	VC7BNA00009B	first revision

**NOTES**

## NOTES

