

mitsubishi **INVERTER** **Instruction Manual**

FR-EPN
DeviceNet™ Communications
Option Unit

DeviceNet is a registered trademark of Open DeviceNet Vendor Association (ODVA).
DeviceNetManager is a trademark of Allen-Bradley Company, Inc.

Warning symbols

For you own safety, please pay special attention to instructions containing the following symbol:



This warning symbol indicates the presence of dangerous voltage. It informs you of high voltage conditions, situation and locations that may cause death or serious injury if you do not follow precautions.

NOTES inform you of situations or conditions which will damage machinery or cause additional motor-operation downtime if you do not take suggested steps to correct or address such situations or conditions.

Thank you for choosing this option unit for the Mitsubishi FREQROL transistorized frequency inverters. Please read this manual carefully before using.

DeviceNet Communications Option Unit (FR-EPN)

This option allows the inverter to be connected to a network adhering to the DeviceNet communications protocol. Some important features are highlighted below.

- Data rates of 125K baud, 250K baud, and 500K baud are selectable.
- Up to 64 stations supported on a single network.
- Ability to add or remove stations without disrupting network operation.
- Network access to all inverter parameters, Start/Stop commands, and monitor data.

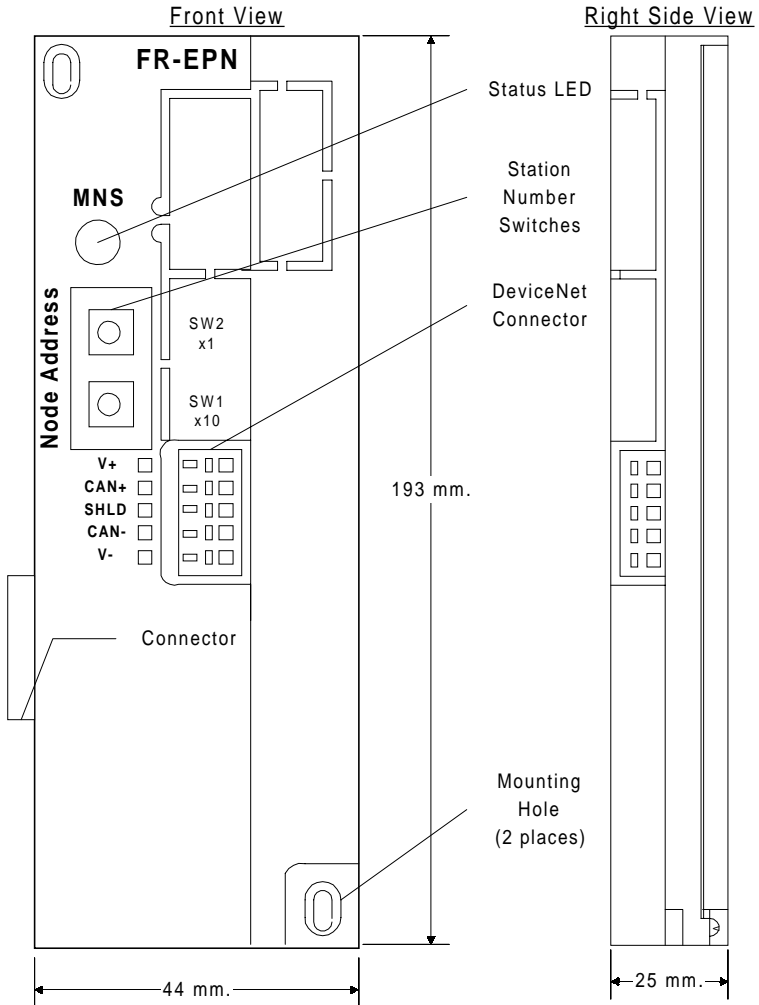
Table of Contents

1. STRUCTURE	1
2. INSTALLATION	2
2.1. PRE-INSTALLATION CHECKS	2
2.2. INSTALLATION PROCEDURE	2
2.3. CONNECTION TO NETWORK	7
2.4. LED STATUS INDICATOR	7
3. GETTING STARTED	10
3.1. BAUD RATE	10
3.2. NET MODE AND PARAMETER SETUP	10
3.3. CONNECTION AND DISCONNECTION	11
4. OPERATION	12
4.1. OPERATION MODES	12
4.2. OPERATION MODE SELECTION	12
4.3. FUNCTIONS AVAILABLE IN OPERATION MODES	13
4.4. INPUT FROM DEVICENET TO INVERTER	13
4.5. OUTPUT FROM INVERTER TO DEVICENET	14
4.6. OPERATION ON ALARM OCCURRENCE	15
4.7. INVERTER RESET	16
5. FR-EPN SPECIFIC PARAMETERS	17
5.1. PR.118	17
5.2. OTHER OPTION-SPECIFIC PARAMETERS	18

6. OBJECT MAP	20
6.1. IDENTITY OBJECT - CLASS 0x01	20
6.2. DEVICENET OBJECT - CLASS 0x03	21
6.3. I/O ASSEMBLIES OBJECT CLASS 04	21
6.4. DEVICENET CONNECTION OBJECT CLASS 0x05	22
6.5. MOTOR DATA OBJECT - CLASS 0x28	25
6.6. CONTROL SUPERVISOR - CLASS 0x29	26
6.7. AC DRIVE CLASS 0x2A	27
6.8. A200E EXTENDED CLASS 0x66	31
7. ELECTRONIC DATA SHEET	36
8. PARAMETERS	37
9. SPECIFICATIONS	48

STRUCTURE

1. STRUCTURE



INSTALLATION

2. INSTALLATION

Remove the inverter cover and install the option unit using the following procedure:

2.1. Pre-Installation Checks

(1) Check the inverter type.

This option unit may only be used with the FREQROL-A100E and A200E series inverters and must not be used with any other series (e. g. A100, A200, Z and F series). These models have a different option connector to prevent connecting by mistake; however, if the user forces the connector, the inverter may be damaged.

(2) Make sure that the inverter input power is off.

The inverter may be damaged if the option unit is installed with the input power on. The inverter executes an initialization procedure at power on that includes checking the option port. Adding the option later causes a hardware conflict which may damage the inverter or option unit and result in the alarm "E. CPU".

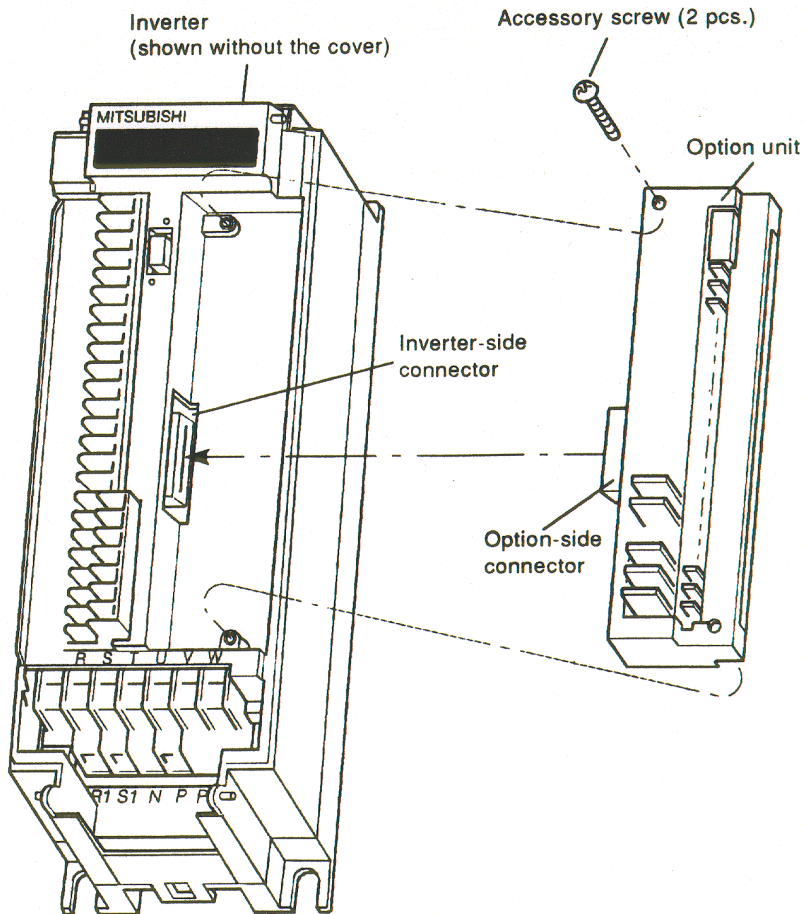
(3) Ensure that the following accessories are supplied with the option unit:

- Instruction Manual
- Mounting Screws M3 x 14

2.2. Installation Procedure

(1) Snugly insert the connector of the option unit into the connector of the inverter.

(2) Securely fix the option unit to the inverter at the top and bottom with the mounting screws. If the screw holes in the option unit do not line up with the inverter mounting holes, check that the connectors have been fitted correctly.

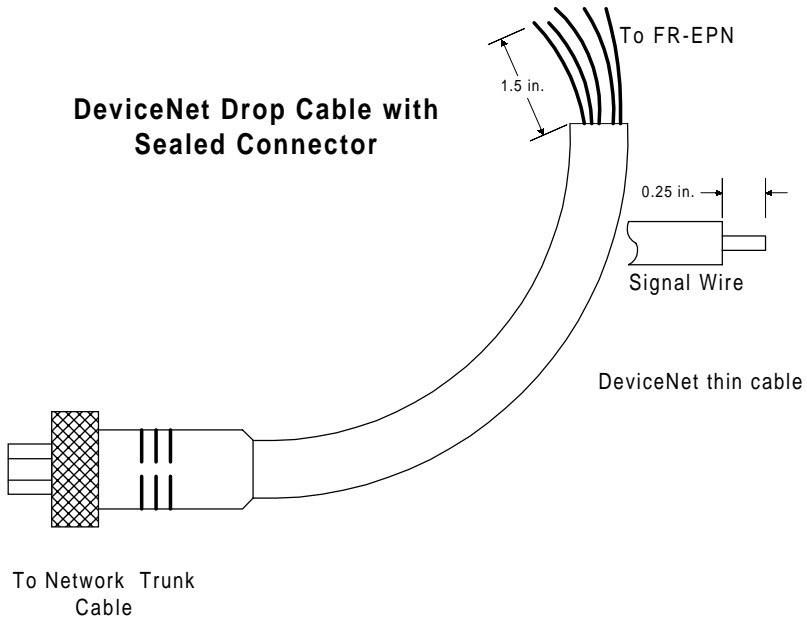


Warning! Hazardous voltage present.

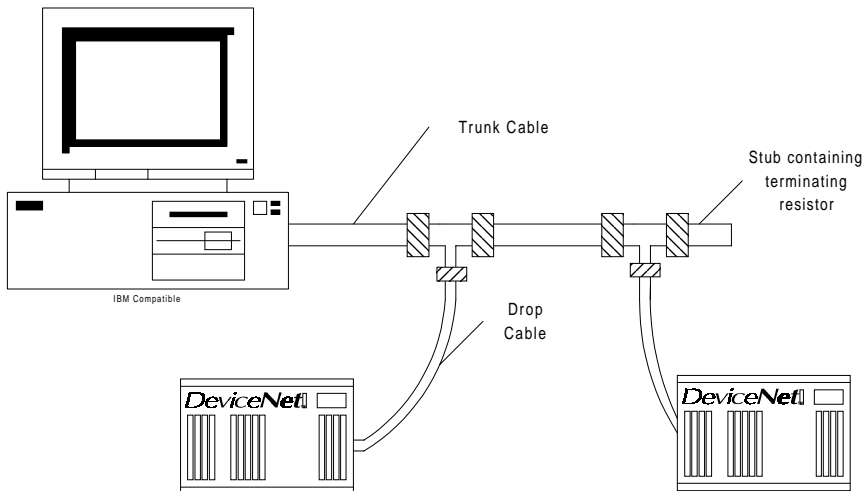
Always isolate the power from the inverter, and wait 5 minutes to ensure the charge lamp has gone out before inserting or removing this option unit, or touching the terminals.

INSTALLATION

- (3) Make a drop cable out of DeviceNet thin cable long enough to extend from the inverter to the network trunk cable. Remember that the maximum length of this cable by the DeviceNet standard is 10 feet. On one end of the cable, install a connector compatible with the trunk cable and leave free wires on the other end. See figures below.



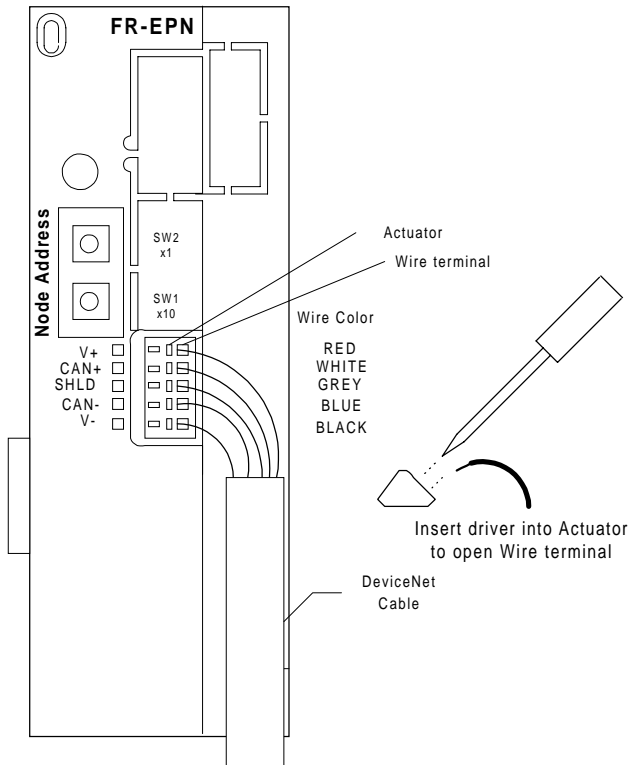
Signal	Color
+V	Red
CAN +	White
Shield	Orange
CAN -	Blue
-V	Black



- (4) Strip the insulation and shielding on the free wire end of the drop cable back about 1.5 inches to expose the four colored signal wires and the silver shield wire. Strip the insulation on the signal wires back about 1/4 inch and tin the leads with solder. Tin the end of the shield wire also to prevent it from fraying. Some pre-made cables have this step already completed.
- (5) Route the cable neatly through the wiring space along with any other wires connected to inverter terminals so that when the front cover is reinstalled, the cables to the inverter control circuit terminals and option terminals are not caught between the inverter and inverter cover.
- (6) Install the signal wires into the DeviceNet terminal block paying close attention to match the colors of the wires with the colored label on the cover. Insertion of a screwdriver into the upper holes of the terminal block opens the clamps in the lower holes to allow wire insertion. A flathead screwdriver of 3 mm maximum width works best. Removal of the screwdriver then closes the clamps on the wire. These clamps grip the wire very tightly and the user should not be able to pull the wires back out if they are installed correctly .

INSTALLATION

Note: The correct method for opening the clamps on the DeviceNet terminal block is simply to insert the screwdriver straight into the unlocking hole. It does not involve inserting the screwdriver and then using a lever action to open the clamps. The increase in screwdriver thickness further up the shaft opens the clamps as the screwdriver is inserted. Do not attempt with an improperly sized screwdriver. See figure below.



2.3. Connection To Network

- (1) Upon completion of the installation procedure, the inverter should be at rest with the power off. The option unit is mounted in the inverter with the drop cable connected to the terminal block, but unconnected to the network trunk cable. Set the node address on the two switches to a number between 0 and 63. SW1 is the tens digit and SW2 is the ones digit. Ensure that the number chosen is not already being used by another station on the network including a master station. Any number out of the range of 0 to 63 is changed to address 63 by the option unit software.

Note: The state of the Node Address switches are sampled once at power on. Changing the Node Address later on will have no effect and the software will keep the number read at power on. Turn power off, readjust the switches, and turn power back on to change the node address.

- (2) It is now safe to apply power to the inverter and run it in PU or external mode provided that any external inverter control cables not associated with DeviceNet are installed correctly. 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 inverter power is on or off. The option unit automatically detects when the connection is made. If connecting to the network with free wires, power to the network and inverter should be shut off as a safety measure in case two or more signal wires are accidentally shorted together.

2.4. LED Status Indicator

- (1) After connecting the drop cable to the trunk cable of the active network, note the condition of the LED labeled MNS on the cover. The option unit uses the Combined Module/Network Status LED scheme proposed in the DeviceNet communications standard. The possible states of this LED are as follows:

INSTALLATION

State of System	LED Condition	Notes
Inverter power off Network Power on	Off	Turn inverter power on. Option unit will then complete duplicate station number test
Network and inverter power on. Connection not yet established by host	Flashing Green	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 communication link.
Network and inverter power on. Connection established by host	Green	A master device on the network has designated the option unit for communication. LED holds this state during communication also.
Connection Time-Out	Flashing Red	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.
Critical Link failure	Red	Failed communication device. <ul style="list-style-type: none"> • Duplicate station number • Network power off. • Cable from option unit to network not connected or severed. • Option unit is only node on network. • Network damaged. • Must cycle power to recover from this fault

Note: When using complex software in the master, the rate of connections and disconnections may be too fast for the user to follow the network status in detail by simply watching the LED.

-
- (2) Match the condition of the LED with the table above. Most likely, it will be flashing red or green depending on the software used in the master station. Once a flashing green LED is achieved, the inverter is ready to connect to its host and begin motor control operations through the network.
 - (3) When inverter power is turned on with the option unit installed, the option performs a diagnostic self test that can be viewed on the MNS LED. This test is performed even if the option unit is not connected to an active network. When power is turned on, the LED flashes green, then red and finally turns off. The option unit then attempts its duplicate station number test and will start flashing green within a few seconds if successful. If unsuccessful, the LED will go solid red.
 - (4) At this point, your DeviceNet option unit should be installed and running properly on your DeviceNet network. Replace the front cover on the inverter paying attention not to cause excess strain on the internal wiring. Your DeviceNet option is now installed. Please read through the rest of this manual for information on the advanced features and detailed operation of this option.

GETTING STARTED

3. GETTING STARTED

3.1. Baud Rate

The baud rate of the FR-EPN is set by the Baud Rate attribute of the DeviceNet class, instance 1 (see section 6.2.3 Class 0x03 Instance Attributes - Instance 1). This setting is also available in Pr.118 (see section 5.1 Pr.118). However, the best way to set it is using a configuration program such as DeviceNetManager software.

To do this, the drive being configured should be set up as the only node on the network aside from the master computer running DeviceNetManager. Performing a parameter all-clear on the drive and cycling power will reset the baud rate to 125 kbps. At this point, DeviceNetManager can be used to configure the baud rate to any of the three possible speeds.

To change the speed manually via the parameter unit, refer to the description of Pr.118.

3.2. Net Mode and Parameter Setup

- (1) The inverter must be in Net Mode for motor control operations through the network. Drive mode is controlled automatically by the FR-EPN option card.

The FR-EPN will attempt to set the drive to Net Mode whenever a DeviceNet connection is made. It will set the drive back to external mode whenever all connections are released. If the drive is running at these times, then the drive will not be set to Net mode, and control cannot be performed via DeviceNet. Monitoring and reading, however, can be performed regardless of the drive mode.

- (2) Parameter 81, Motor Pole Count, defaults to four internally even though 9999 is displayed in the parameter unit. This parameter can be modified via the network to control motors other than four pole motors. An incorrect value for parameter 81 results in an incorrect motor speed.

3.3. Connection and Disconnection

- (1) The FR-EPN option unit is considered a slave device in the DeviceNet communications standard. This means that it cannot send messages out on its own and dictate the operations of other devices on the network. A master device establishes a connection to the option unit, sends commands, requests for information, etc., and finally disconnects when communication is completed. The purpose of connection and disconnection is to prevent two master devices from sending motor control commands to the same motor at the same time. It is possible for one master to control the motor while another reads monitor data and parameters.
- (2) The option unit operates somewhat independently of the inverter in that a master may connect or disconnect while the inverter is in PU mode. However, motor control commands from the network will not be recognized unless the connection is made while the inverter is in external mode.
- (3) When the master device disconnects from the option unit or the option unit loses connection due to some fault such as a network power failure, the inverter continues with the last command received until the timeout value is reached. This is set in the expected packet rate of the DeviceNet connection object. For example, the master might send a command to start forward at 60 Hz and then disconnect. The MNS LED will be green during communication and switch to flashing green upon disconnection. The motor will run at 60 Hz until the timeout occurs or the master establishes a new connection and sends different commands.

OPERATION

4. OPERATION

Operation of the A200E changes slightly when the FR-EPN is installed, and those changes are described here. Parameter definitions including newly created parameters, as well as operation with the FR-EPN installed are described.

4.1. Operation Modes

4.1.1. *PU operation mode*

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

4.1.2. *External operation mode*

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

4.1.3. *Network (computer link) operation mode*

Control of the inverter is via commands from a DeviceNet master. However, FR-EPN-specific parameters 123 and 124 can be used to select external control for forward/reverse/stop and output frequency setting.

4.2. Operation Mode Selection

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

mode change	required action
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

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

- inverter is stopped
- forward and reverse commands are off

Parameter 125 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 table indicates the available commands according to the inverter operation mode.

control type	command type	operation mode		
		net mode	external mode	PU mode
DeviceNet	operation command	yes *1	no	no
	output frequency setting	yes *1	no	no
	monitor	yes	yes	yes
	parameter write	yes (while stopped) *3	no *3	no *3
	parameter read	yes	yes	yes
	inverter reset	yes *2	no	no
external terminals	operation command	yes *1	yes	no
	output frequency setting	yes *1	yes	no
	inverter reset	yes	yes	yes

*1: depends on value of Pr.123 & 124

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

*3: as set in Pr.77

4.4. Input from DeviceNet to Inverter

4.4.1. Operation Commands

FR-EPN supports STF and STR. Other operation command inputs are not supported.

OPERATION

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. Inverter Reset

Inverter 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 reset service.

4.4.4. Parameter Writing

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

4.5. Output from Inverter to DeviceNet

4.5.1. Inverter Status

Inverter status can be monitored using class 0x2A, attribute 40, the A200E Status. This is a bitmapped status byte defined as follows:

bit	definition	
0	running	(RUN)
1	forward running	
2	reverse running	
3	up to frequency	(SU)
4	overload	(OL)
5	instantaneous power failure	(IPF)
6	frequency detection	(FU)
7	alarm	

4.5.2. Inverter Monitoring

The following items can be monitored:

- output frequency
- output current
- output voltage
- running speed (RPM)
- motor torque

- converter output voltage
- regenerative brake duty
- electronic overcurrent protection load factor
- output current peak value
- input power
- output power
- frequency setting
- peak voltage
- terminal in
- terminal out

4.5.3. Parameter Read

For parameter reading, all standard and special parameters are supported. In addition, the parameters listed in the Option-specific Parameter section of this specification are supported. Hidden parameters are not supported.

All available parameters are available all the time, regardless of special settings which may be needed to read parameters using the PU or other communications option cards (e.g. Prs. 61-64 and 201-230).

4.6. Operation on Alarm Occurrence

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

type of fault	item	operation mode		
		net mode	external mode	PU mode
inverter	inverter operation	stop	stop	stop
	network communication	continue	continue	continue
DeviceNet communication	inverter operation	stop *1	continue	continue
	network communication	continue *2	continue *2	continue *2

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

*2: depends on the type of communication fault



OPERATION

4.7. Inverter Reset

Inverter reset behavior is as noted above.

FR-EPN SPECIFIC PARAMETERS

5. FR-EPN SPECIFIC PARAMETERS

There are several parameters which are used only when the EPN is installed in the A200E. The following sections describe these parameters.

5.1. Pr.118

To support the FR-EPN, one new parameter was created, Pr.118. It is described below.

Pr. No.	Function	Setting Range	Minimum Increment	Default Setting
118	DeviceNet Startup Data	0 to 65535	1	1343

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

15	14	13	12	11	10	9	8
reserved	Watchdog Timeout Action		DNFault Mode	Input Assembly		Output Assembly	

7	6	5	4	3	2	1	0
Baud Rate		Device Address					

FR-EPN SPECIFIC PARAMETERS

The following table defines each entry.

Name	Description	Semantics	Default Value
Watchdog Timeout Action	supports DeviceNet Connection Object (class code 0x05) instance 2 attribute 12,	0 = transition to timed out 1 = auto delete 2 = auto reset	0
DN Fault Mode	supports Control Supervisor Object (class code 0x29) instance attribute 16, DNFaultMode	0 = fault + stop 1 = ignore	0
Input Assembly	value of assembly ID used in Connection Object (class code 0x05) instance attribute 16, consumed_connection_path	static assembly instance ID 0 = 0x46 1 = 0x47	1
Output Assembly	value of assembly ID used in Connection Object (class code 0x05) instance attribute 14, produced_connection_path	static assembly instance ID 0 = 0x14 1 = 0x15	1
Baud Rate	value of DeviceNet Object (class code 0x03) instance attribute 2, Baud Rate	0 = 125 kbps 1 = 250 kbps 2 = 500 kbps (same as attribute semantics)	0
Device Address	value of DeviceNet Object (class code 0x03) instance attribute 1, MAC ID	node address; range is 0 - 63 (same as attribute semantics)	63

Pr.118 is a special parameter. Access is allowed only when Pr.77 = 701.

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

5.2. Other option-specific parameters

The following table identifies option-specific parameters which are reused for the EPN. The definitions for Pr. 125 and Pr.127 are identical to the definitions for use with the EPB.

Parameter No.	Function	Setting Range	Minimum Increment	Default Setting
123	Operation command right	0, 1	1	0
124	Speed command right	0, 1	1	0
125	Link start-up mode selection	0, 1, 2	1	0
127	Setting of E ² PROM write by FR-EPN	0, 1	1	0

Below is the definition for Pr. 123 and Pr. 124.

Control Source Selection		Functions													
Pr.123 (control)	Pr.124 (speed ref.)	STF	STR	STOP	JOG	RT	2	4	1	RH, RM, RL	AU	RES	MRS	OH	CS
0 (DeviceNet)	0 (DeviceNet)	DN	DN	-	-	-	DN	-	aux	-	-	both	ext	ext	ext
0 (DeviceNet)	1 (External terminal)	DN	DN	-	-	-	ext	ext	ext	ext	ext	both	ext	ext	ext
1 (External terminal)	0 (DeviceNet)	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

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

OBJECT MAP

6. OBJECT MAP

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

6.1. Identity Object - Class 0x01

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	200
4	Get	Revision	Word	0100
5	Get	Status	Word	
6	Get	Serial Number	Word	xxxx
7	Get	Name	Word	A200E

6.1.4. Instance Services - Instance 1

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

6.2. DeviceNet Object - Class 0x03

6.2.1. Class 0x03 Attributes - Instance 0

None

6.2.2. Class 0x03 Services - Instance 0

None

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

6.2.4. Class 0x03 Instance Services - Instance 1

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

6.3. I/O Assemblies Object Class 04

6.3.1. Output Instance 20 (3-9.5 AC Drive Profile)

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

OBJECT MAP

6.3.2. Output Instance 21 (3-9.5 AC Drive Profile)

Instance 0x15	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit0
	0		NetRef	NetCtrl			Fault Reset	Run Rev	Run Fwd
	1								
	2	Speed Reference (Low Byte)							
	3	Speed Reference (High Byte)							

6.3.3. Input Instance 70 (3-9.5 AC Drive Profile)

Instance 0x46	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit0
	0						Run(1) Fwd		Faulted
	1								
	2	Speed Actual (Low Byte)							
	3	Speed Actual (High Byte)							

6.3.4. Input Instance 71 (3-9.5 AC Drive Profile)

Instance 0x47	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit0
	0	At Ref Speed	Ref From Net	Ctrl From Net	Ready	Run(2) Rev	Run(1) Fwd	Warning	Faulted
	1								
	2	Speed Actual (Low Byte)							
	3	Speed Actual (High Byte)							

6.4. DeviceNet Connection Object Class 0x05

6.4.1. Class 0x05 Attributes - Instance 0

None

6.4.2. Class 0x05 Services - Instance 0

None

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	

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	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

OBJECT MAP

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	

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	

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	

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

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

6.5. Motor Data Object - Class 0x28

6.5.1. Class 0x28 Attributes - Instance 0

None

6.5.2. Class 0x28 Services - Instance 0

None

OBJECT MAP

6.5.3. Class 0x28 Instance Attributes Instance 1

#	Access	Attribute	Value
3	Get/Set	Motor Type	7
6	Get/Set	Rated Current	
7	Get/Set	Rated Voltage	
8	Get/Set	Rated Power	
9	Get/Set	Rated Frequency	
12	Get/Set	Polecount	
15	Get/Set	Base Speed	

6.5.4. Class 0x28 Instance Services

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

6.6. Control Supervisor - Class 0x29

6.6.1. Class 0x29 Attributes - Instance 0

None

6.6.2. Class 0x29 Services

None

6.6.3. Class 0x29 Instance Attributes Instance 1

#	Access	Attribute	Value
3	Get/Set	Run1	
4	Get/Set	Run2	
5	Get/Set	NetCtrl	
6	Get	State	
7	Get	Running1	
8	Get	Running2	
9	Get	Ready	
10	Get	Faulted	
12	Get/Set	FaultRst	
13	Get	Fault Code	
15	Get	CtrlFromNet	
16	Get/Set	DNFaultMode	
70	Get/Set	Input Assembly	
71	Get/Set	Output Assembly	

6.6.4. Class 0x29 Instance Services

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

6.7. AC Drive Class 0x2A

6.7.1. Class 0x2A Attributes - Instance 0

None

6.7.2. Class 0x2A Services

None

6.7.3. Class 0x2A Instance Attributes Instance 1

AC Profile Compatible

#	Access	Attribute	Value
1	Get	One	1
3	Get	At Reference	
4	Get/Set	Net Reference	
6	Get/Set	Drive Mode	
7	Get	SpeedActual	
8	Get/Set	SpeedRef	
9	Get	Current Actual	
10	Get/Set	Current Limit	
15	Get	Power Actual	
16	Get	Input Voltage	
17	Get	Output Voltage	
18	Get/Set	AccelTime	
19	Get/Set	DecelTime	
20	Get/Set	LowSpeedLimit	
21	Get/Set	HighSpeedLimit	
29	Get	RefFromNet	

OBJECT MAP

A200E Real Time Parameters

#	Access	Attribute	Value
40	Get	A200 Status	
41	Get	Output Power	
42	Get	Input Power	
43	Get	Peak Current	
44	Get	Load Factor	
45	Get	Brake Duty	
46	Get	Converter Voltage	
47	Get	Motor Torque	
48	Get	Running Speed	
49	Get	Output Voltage	
50	Get	Output Current	
51	Get	Output Frequency	
52	Get	Run Status	
53	Get	Alarm History 1	
54	Get	Alarm History 2	
55	Get	Alarm History 3	
56	Get	Alarm History 4	
57	Get	Alarm History 5	
58	Get	Alarm History 6	
59	Get	Alarm History 7	
60	Get	Alarm History 8	

A200E Parameters (Parameter 0 = 100)

#	Access	Attribute	Default Value
100	Get/Set	Torque Boost	6.0 %
101	Get/Set	Max Freq Limit	120.00 Hz
102	Get/Set	Min Freq Limit	0.00 Hz
103	Get/Set	Base Frequency	60.00 Hz
104	Get/Set	Multi High Speed	60.00 Hz
105	Get/Set	Multi Middle Speed	30.00 Hz
106	Get/Set	Multi Low Speed	10.00 Hz
107	Get/Set	Acceleration Time	5.0 Sec
108	Get/Set	Deceleration Time	5.0 Sec
109	Get/Set	Electronic Thermal O/L Relay	1.30 Amp
110	Get/Set	DC Dynamic Brake Operation	3.00 Hz
111	Get/Set	DC Dynamic Brake Operation	0.5 Sec
112	Get/Set	DC Dynamic Brake Voltage	6.0 %
113	Get/Set	Starting Frequency	0.50 Hz
114	Get/Set	Applied Load Selection	0
115	Get/Set	Jog Frequency	5.00 Hz
116	Get/Set	Jog Accel/Decel Time	0.5 Sec
117	Get/Set	Ext Thermal Relay Input	0
118	Get/Set	High Speed Max Freq Limit	120.00 Hz
119	Get/Set	Base Frequency Voltage	999.90 Volt
120	Get/Set	acc/decel ref freq	60.00 Hz
121	Get/Set	Acc/Decel Time Increment	0
122	Get/Set	Stall Prevention Operation	15.00 %
123	Get/Set	High Speed Stall Prevent	999.90 %
124	Get/Set	Multi-Speed Setting (4th)	99.99 Hz
125	Get/Set	Multi-Speed Setting (5th)	99.99 Hz
126	Get/Set	Multi-Speed Setting (6th)	99.99 Hz
127	Get/Set	Multi-Speed Setting (7th)	99.99 Hz
128	Get/Set	Multi-Speed Input Compensation	0
129	Get/Set	Acceleration/Deceleration	0
130	Get/Set	External Brake Resistor	0
131	Get/Set	Frequency Jump 1A	99.99 Hz
132	Get/Set	Frequency Jump 1B	99.99 Hz
133	Get/Set	Frequency Jump 2A	99.99 Hz
134	Get/Set	Frequency Jump 2B	99.99 Hz
135	Get/Set	Frequency Jump 3A	99.99 Hz
136	Get/Set	Frequency Jump 3B	99.99 Hz
137	Get/Set	Speed Display	4
138	Get/Set	Automatic Torque Boost	0.00 %
139	Get/Set	Torque Boost Starting Cu	0.00 Amp
140	Get/Set	Output Terminal Assignment	1234
141	Get/Set	Up-to-Frequency Sensitivity	10.0
142	Get/Set	Output Freq Detect FWD	6.00 Hz
143	Get/Set	Output Freq Detect REV	99.99 Hz
144	Get/Set	Alternate Acceleration/D	5.0 Sec

OBJECT MAP

145	Get/Set	Alternate Deceleration T	999.9 Sec
146	Get/Set	Alternate Torque Boost	999.9 %
147	Get/Set	Alternate V/F (base freq	99.99 Hz
148	Get/Set	Alternate Stall Prevention	150.0 %
149	Get/Set	Alternate Stall Prevention	30.00 Hz
150	Get/Set	Alternate Output Frequency	0.01 Hz
151	Get/Set	Inverter LED Display Data Selection	1
152	Get/Set	PU Main Display Data Selection	0
153	Get/Set	PU Level Display Data Se	1
154	Get/Set	FM Terminal Function Selection	1
155	Get/Set	Frequency Monitoring Ref	60.00 Hz
156	Get/Set	Current Monitoring Refer	1.50 Amp
157	Get/Set	Restart Coasting Time	999.9 Sec
158	Get/Set	Restart Cushion Time	1.0 Sec
159	Get/Set	Remote Setting Function	0
160	Get/Set	Intelligent Mode Selection	0
161	Get/Set	Reference I for Intelligent Mode	99.99 Amp
162	Get/Set	Reference I for Intelligent Mode Acceleration	999.9 %
163	Get/Set	Reference I for Intelligent Mode Deceleration	999.9 %
164	Get/Set	Starting F for Elevator	999.9 Hz
165	Get/Set	Retry Selection	0
166	Get/Set	Start Prevention Operation	60.00 Hz
167	Get/Set	Number of Retries at Alarm	0
168	Get/Set	Retry Waiting Time	1.0 Sec
169	Get/Set	Retry Count Display Eras	0
170	Get/Set	Special Regenerative Bra	0.0 %
171	Get/Set	Applied Motor	0
172	Get/Set	PWM Frequency Selection	14.5 kHz
173	Get/Set	0 to 5v, 0 to 10v Select	1
174	Get/Set	Response Time for Analog	1
175	Get/Set	Reset Selection	0
176	Get/Set	Alarm Code Output Select	0
177	Get/Set	Parameter Write Disable	0
178	Get/Set	Reverse Rotation Prevent	0
179	Get/Set	Operation Mode Selection	0
180	Get/Set	Motor Capacity	99.99 kW
181	Get/Set	Number of Motor Poles	9999
182R	Get	Set by Manufacturer	99.99
183	Get/Set	Rated Motor Voltage	400.0 Volt
184	Get/Set	Rated Motor Frequency	60.00 Hz
185			
186	Get/Set	Ex. Curr. Lo. Speed Mag	130.0%
187			
188	Get/Set	Q Axis Gain Control	100.0%
189	Get/Set	Speed Gain Control	100.0%

190	Get/Set	Motor Constant R1	9999
191	Get/Set	Motor Constant R2	9999
192	Get/Set	Motor Constant L1	9999
193	Get/Set	Motor Constant L2	9999
194	Get/Set	Motor Constant X	9999
195			
196	Get/Set	Auto Tuning Setting/State	0

6.7.4. Class 0x2A Instance Services

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

6.8. A200E Extended Class 0x66

6.8.1. Class 0x66 Attributes - Instance 0

None

6.8.2. Class 0x66 Services

None

6.8.3. Class 0x66 Instance Attributes Instance 1

A200E Special Functions

#	Function	Access	Attribute	Default Value
1	Fn123	Get/Set	Operation Command Source	Net
2	Fn124	Get/Set	Frequency Command Source	Net
3	Fn125	Get/Set	Start Up Link Selection	0
4	Fn127	Get/Set	EEPROM Write Enable	Y
5	Fn145	Get/Set	PU Language Switching	0
6	Fn155	Get/Set	RT Activated Condition	0
7	Fn156	Get/Set	Stall Prevention Selection	0
8	Fn157	Get/Set	OL Signal Waiting Time	0.0
9	Fn158	Get/Set	AM Terminal Function Select	9999
10	Fn159	Get/Set	Carrier decreases Sel. Low Speed	0

OBJECT MAP

Programmed Operation Function (Group 1)

#	Function	Access	Attribute	Default Value
11	Fn200	Get/Set	Program Time Selection	0
12	Fn201 Dir	Get/Set	Program Setting 1 Direction	0
13	Fn201 Freq	Get/Set	Program Setting 1 Frequency	999.9 Hz
14	Fn201 Time	Get/Set	Program Setting 1 Time	0.00 Time
15	Fn202 Dir	Get/Set	Program Setting 2 Direction	0
16	Fn202 Freq	Get/Set	Program Setting 2 Frequency	999.9 Hz
17	Fn202 Time	Get/Set	Program Setting 2 Time	0.00 Time
18	Fn203 Dir	Get/Set	Program Setting 3 Direction	0
19	Fn203 Freq	Get/Set	Program Setting 3 Frequency	999.9 Hz
20	Fn203 Time	Get/Set	Program Setting 3 Time	0.00 Time
21	Fn204 Dir	Get/Set	Program Setting 4 Direction	0
22	Fn204 Freq	Get/Set	Program Setting 4 Frequency	999.9 Hz
23	Fn204 Time	Get/Set	Program Setting 4 Time	0.00 Time
24	Fn205 Dir	Get/Set	Program Setting 5 Direction	0
25	Fn205 Freq	Get/Set	Program Setting 5 Frequency	999.9 Hz
26	Fn205 Time	Get/Set	Program Setting 5 Time	0.00 Time
27	Fn206 Dir	Get/Set	Program Setting 6 Direction	0
28	Fn206 Freq	Get/Set	Program Setting 6 Frequency	999.9 Hz
29	Fn206 Time	Get/Set	Program Setting 6 Time	0.00 Time
30	Fn207 Dir	Get/Set	Program Setting 7 Direction	0
31	Fn207 Freq	Get/Set	Program Setting 7 Frequency	999.9 Hz
32	Fn207 Time	Get/Set	Program Setting 7 Time	0.00 Time
33	Fn208 Dir	Get/Set	Program Setting 8 Direction	0
34	Fn208 Freq	Get/Set	Program Setting 8 Frequency	999.9 Hz
35	Fn208 Time	Get/Set	Program Setting 8 Time	0.00 Time
36	Fn209 Dir	Get/Set	Program Setting 9 Direction	0
37	Fn209 Freq	Get/Set	Program Setting 9 Frequency	999.9 Hz
38	Fn209 Time	Get/Set	Program Setting 9 Time	0.00 Time
39	Fn210 Dir	Get/Set	Program Setting 10 Direction	0
40	Fn210 Freq	Get/Set	Program Setting 10 Frequency	999.9 Hz
41	Fn210 Time	Get/Set	Program Setting 10 Time	0.00 Time

Programmed Operation Function (Group 2)

#	Function	Access	Attribute	Default Value
42	Fn211 Dir	Get/Set	Program Setting 11 Direction	0
43	Fn211 Freq	Get/Set	Program Setting 11 Frequency	999.9 Hz
44	Fn211 Time	Get/Set	Program Setting 11 Time	0.00 Time
45	Fn212 Dir	Get/Set	Program Setting 12 Direction	0
46	Fn212 Freq	Get/Set	Program Setting 12 Frequency	999.9 Hz
47	Fn212 Time	Get/Set	Program Setting 12 Time	0.00 Time
48	Fn213 Dir	Get/Set	Program Setting 13 Direction	0
49	Fn213 Freq	Get/Set	Program Setting 13 Frequency	999.9 Hz
50	Fn213 Time	Get/Set	Program Setting 13 Time	0.00 Time
51	Fn214 Dir	Get/Set	Program Setting 14 Direction	0
52	Fn214 Freq	Get/Set	Program Setting 14 Frequency	999.9 Hz
53	Fn214 Time	Get/Set	Program Setting 14 Time	0.00 Time
54	Fn215 Dir	Get/Set	Program Setting 15 Direction	0
55	Fn215 Freq	Get/Set	Program Setting 15 Frequency	999.9 Hz
56	Fn215 Time	Get/Set	Program Setting 15 Time	0.00 Time
57	Fn216 Dir	Get/Set	Program Setting 16 Direction	0
58	Fn216 Freq	Get/Set	Program Setting 16 Frequency	999.9 Hz
59	Fn216 Time	Get/Set	Program Setting 16 Time	0.00 Time
60	Fn217 Dir	Get/Set	Program Setting 17 Direction	0
61	Fn217 Freq	Get/Set	Program Setting 17 Frequency	999.9 Hz
62	Fn217 Time	Get/Set	Program Setting 17 Time	0.00 Time
63	Fn218 Dir	Get/Set	Program Setting 18 Direction	0
64	Fn218 Freq	Get/Set	Program Setting 18 Frequency	999.9 Hz
65	Fn218 Time	Get/Set	Program Setting 18 Time	0.00 Time
66	Fn219 Dir	Get/Set	Program Setting 19 Direction	0
67	Fn219 Freq	Get/Set	Program Setting 19 Frequency	999.9 Hz
68	Fn219 Time	Get/Set	Program Setting 19 Time	0.00 Time
69	Fn220 Dir	Get/Set	Program Setting 20 Direction	0
70	Fn220 Freq	Get/Set	Program Setting 20 Frequency	999.9 Hz
71	Fn220 Time	Get/Set	Program Setting 20 Time	0.00 Time

OBJECT MAP

Programmed Operation Function (Group 3)

#	Function	Access	Attribute	Default Value
72	Fn221 Dir	Get/Set	Program Setting 21 Direction	0
73	Fn221 Freq	Get/Set	Program Setting 21 Frequency	999.9 Hz
74	Fn221 Time	Get/Set	Program Setting 21 Time	0.00 Time
75	Fn222 Dir	Get/Set	Program Setting 22 Direction	0
76	Fn222 Freq	Get/Set	Program Setting 22 Frequency	999.9 Hz
77	Fn222 Time	Get/Set	Program Setting 22 Time	0.00 Time
78	Fn223 Dir	Get/Set	Program Setting 23 Direction	0
79	Fn223 Freq	Get/Set	Program Setting 23 Frequency	999.9 Hz
80	Fn223 Time	Get/Set	Program Setting 23 Time	0.00 Time
81	Fn224 Dir	Get/Set	Program Setting 24 Direction	0
82	Fn224 Freq	Get/Set	Program Setting 24 Frequency	999.9 Hz
83	Fn224 Time	Get/Set	Program Setting 24 Time	0.00 Time
84	Fn225 Dir	Get/Set	Program Setting 25 Direction	0
85	Fn225 Freq	Get/Set	Program Setting 25 Frequency	999.9 Hz
86	Fn225 Time	Get/Set	Program Setting 25 Time	0.00 Time
87	Fn226 Dir	Get/Set	Program Setting 26 Direction	0
88	Fn226 Freq	Get/Set	Program Setting 26 Frequency	999.9 Hz
89	Fn226 Time	Get/Set	Program Setting 26 Time	0.00 Time
90	Fn227 Dir	Get/Set	Program Setting 27 Direction	0
91	Fn227 Freq	Get/Set	Program Setting 27 Frequency	999.9 Hz
92	Fn227 Time	Get/Set	Program Setting 27 Time	0.00 Time
93	Fn228 Dir	Get/Set	Program Setting 28 Direction	0
94	Fn228 Freq	Get/Set	Program Setting 28 Frequency	999.9 Hz
95	Fn228 Time	Get/Set	Program Setting 28 Time	0.00 Time
96	Fn229 Dir	Get/Set	Program Setting 29 Direction	0
97	Fn229 Freq	Get/Set	Program Setting 29 Frequency	999.9 Hz
98	Fn229 Time	Get/Set	Program Setting 29 Time	0.00 Time
99	Fn230 Dir	Get/Set	Program Setting 30 Direction	0
100	Fn230 Freq	Get/Set	Program Setting 30 Frequency	999.9 Hz
101	Fn230 Time	Get/Set	Program Setting 30 Time	0.00 Time
102	Fn231	Get/Set	Time of Day Setting	Up Time

Calibration Functions

#	Function	Access	Attribute	Default Value
103	Fn900	Get/Set	FM Terminal Calibration	1359
104	Fn901	Get/Set	AM Terminal Calibration	3522
105	Fn902 Freq	Get/Set	Freq Voltage Bias - Freq	0.00 Hz
106	Fn902 %	Get/Set	Freq Voltage Bias - Percent	0.0 %
107	Fn903 Freq	Get/Set	Freq Voltage Gain - Freq	60.00 Hz
108	Fn903 %	Get/Set	Freq Voltage Gain - Percent	97.0 %
109	Fn904 Freq	Get/Set	Freq Current Bias - Freq	0.00 Hz
110	Fn904 %	Get/Set	Freq Current Bias - Percent	18.8 %
111	Fn905 Freq	Get/Set	Freq Current Gain - Freq	60.00 Hz
112	Fn905 %	Get/Set	Freq Current Gain - Percent	92.7 %

6.8.4. Class 0x66 Instance Services

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

ELECTRONIC DATA SHEET

7. ELECTRONIC DATA SHEET

The Electronic Data Sheet, or EDS file, is a standard DeviceNet file which defines the configurable parameters of a device. It is used in conjunction with DeviceNet configuration software which uses the EDS file to guide a user through the configuration process of a particular device.

One such configuration package is Allen-Bradley's DeviceNetManager. This is a software product which allows a user to commission nodes on a network and configure specific devices. To use this software, you need the EDS file for the A200E/FR-EPN. This file is available as a separate product.

PARAMETERS

8. PARAMETERS

parameter		support			mapping			
no.	function	EPN	EDS	am mn	object	attribute or service	attrib. id/service code	attrib/ service name

Standard Parameters (bank 0):

0	Torque Boost	•	•		AC/DC Drive	attribute	100	
1	Max Freq Limit	•	•	•	AC/DC Drive	attribute	21	HighSpdLimit
		•	•		AC/DC Drive	attribute	101	
2	Min Freq Limit	•	•	•	AC/DC Drive	attribute	20	LowSpdLimit
		•	•		AC/DC Drive	attribute	102	
3	Base Frequency	•	•	•	Motor Data/AC Motor Instance	attribute	9	RatedFreq
		•	•		AC/DC Drive	attribute	103	
4	Multi-Speed Setting (High Speed)	•	•		AC/DC Drive	attribute	104	
5	Multi-Speed Setting (Middle Speed)	•	•		AC/DC Drive	attribute	105	
6	Multi-Speed Setting (Low Speed)	•	•		AC/DC Drive	attribute	106	
7	Acceleration Time	•	•	•	AC/DC Drive	attribute	18	AccelTime
		•	•		AC/DC Drive	attribute	107	
8	Deceleration Time	•	•	•	AC/DC Drive	attribute	19	DecelTime
		•	•		AC/DC Drive	attribute	108	
9	Elec Thermal O/L Relay	•	•		AC/DC Drive	attribute	109	
10	DC Dynamic Brake Operation Frequency	•	•		AC/DC Drive	attribute	110	
11	DC Dynamic Brake Operation Time	•	•		AC/DC Drive	attribute	111	
12	DC Dynamic Brake Voltage	•	•		AC/DC Drive	attribute	112	
13	Starting Frequency	•	•		AC/DC Drive	attribute	113	

PARAMETERS

14	Applied Load Selection	•	•		AC/DC Drive	attribute	114	
15	Jog Frequency	•	•		AC/DC Drive	attribute	115	
16	Jog Accel/Decel Time	•	•		AC/DC Drive	attribute	116	
17	Ext Thermal Relay Input	•	•		AC/DC Drive	attribute	117	
18	High Speed Maximum Frequency Limit	•	•	•	AC/DC Drive	attribute	21 ???	HighSpdLimit
		•	•		AC/DC Drive	attribute	118	
19	Base Frequency Voltage	•	•	•	Motor Data (AC)	attribute	7	RatedVoltage
		•	•		AC/DC Drive	attribute	119	
20	Accel/Decel Ref Freq	•	•		AC/DC Drive	attribute	120	
21	Accel/Decel Time Increments	•	•		AC/DC Drive	attribute	121	
22	Stall Prevention Operation Level	•	•		AC/DC Drive	attribute	122	
23	High Speed Stall Prevention Operation Level	•	•		AC/DC Drive	attribute	123	
24	Multi-Speed Setting (Speed 4)	•	•		AC/DC Drive	attribute	124	
25	Multi-Speed Setting (Speed 5)	•	•		AC/DC Drive	attribute	125	
26	Multi-Speed Setting (Speed 6)	•	•		AC/DC Drive	attribute	126	
27	Multi-Speed Setting (Speed 7)	•	•		AC/DC Drive	attribute	127	
28	Multi-Speed Input Compensation	•	•		AC/DC Drive	attribute	128	
29	Acceleration/Deceleration pattern	•	•		AC/DC Drive	attribute	129	
30	External Brake Resistor Selection	•	•		AC/DC Drive	attribute	130	
31	Frequency Jump 1A	•	•		AC/DC Drive	attribute	131	
32	Frequency Jump 1B	•	•		AC/DC Drive	attribute	132	
33	Frequency Jump 2A	•	•		AC/DC Drive	attribute	133	
34	Frequency Jump 2B	•	•		AC/DC Drive	attribute	134	
35	Frequency Jump 3A	•	•		AC/DC Drive	attribute	135	

36	Frequency Jump 3B	•	•		AC/DC Drive	attribute	136	
37	Speed Display	•	•		AC/DC Drive	attribute	137	
38	Automatic Torque Boost	•	•		AC/DC Drive	attribute	138	
39	Automatic Torque Boost Starting Current	•	•		AC/DC Drive	attribute	139	
40	Output Terminal Assignment	•	•		AC/DC Drive	attribute	140	
41	Up to Frequency Sensitivity	•	•		AC/DC Drive	attribute	141	
42	Output Frequency Detection FWD	•	•		AC/DC Drive	attribute	142	
43	Output Frequency Detection REV	•	•		AC/DC Drive	attribute	143	
44	Second Accel/Decel Time	•	•		AC/DC Drive	attribute	144	
45	Second Deceleration Time	•	•		AC/DC Drive	attribute	145	
46	Second Torque Boost	•	•		AC/DC Drive	attribute	146	
47	Second V/F (base frequency)	•	•		AC/DC Drive	attribute	147	
48	Second Stall Prevention Level (Current)	•	•		AC/DC Drive	attribute	148	
49	Second Stall Prevention Level (Frequency)	•	•		AC/DC Drive	attribute	149	
50	Second Output Frequency Detection	•	•		AC/DC Drive	attribute	150	
51	Inverter LED Display Data Selection	•	•		AC/DC Drive	attribute	151	
52	PU Main Display Data Selection	•	•		AC/DC Drive	attribute	152	
53	PU Level Display Data Selection	•	•		AC/DC Drive	attribute	153	
54	FM Terminal Function Selection	•	•		AC/DC Drive	attribute	154	
55	Frequency Monitoring Reference	•	•		AC/DC Drive	attribute	155	
56	Current Monitoring Reference	•	•		AC/DC Drive	attribute	156	
57	Coasting Time For Automatic Restart	•	•		AC/DC Drive	attribute	157	
58	Automatic Restart Time	•	•		AC/DC Drive	attribute	158	
59	Remote Setting Function Selection	•	•		AC/DC Drive	attribute	159	

PARAMETERS

60	Intelligent Mode Selection	•	•		AC/DC Drive	attribute	160	
61	Reference Current	•			AC/DC Drive	attribute	161	
62	Reference Current for Acceleration	•			AC/DC Drive	attribute	162	
63	Reference Current for Deceleration	•			AC/DC Drive	attribute	163	
64	Starting Frequency for Elevator Mode	•			AC/DC Drive	attribute	164	
65	Retry Selection	•	•		AC/DC Drive	attribute	165	
66	Stall Prevention Operation Reduction Starting Frequency	•	•		AC/DC Drive	attribute	166	
67	Number of Retries at Alarm Occurrence	•	•		AC/DC Drive	attribute	167	
68	Retry Waiting Time	•	•		AC/DC Drive	attribute	168	
69	Retry Count Display Erasure	•	•		AC/DC Drive	attribute	169	
70	Special Regenerative Brake Duty	•	•		AC/DC Drive	attribute	170	
71	Applied Motor	•	•		AC/DC Drive	attribute	171	
72	PWM Frequency Selection	•	•		AC/DC Drive	attribute	172	
73	0 to 5V, 0 to 10V Selection	•	•		AC/DC Drive	attribute	173	
74	Input Filter Time Constant	•	•		AC/DC Drive	attribute	174	
75	Reset Selection/PU Disconnection Detection	•	•		AC/DC Drive	attribute	175	
76	Alarm Code Output Selection	•	•		AC/DC Drive	attribute	176	
77	Parameter Write Disable Selection	•	•		AC/DC Drive	attribute	177	
78	Reverse Rotation Prevention Selection	•	•		AC/DC Drive	attribute	178	
79	Operation Mode Selection	•	•		AC/DC Drive	attribute	179	
80	Motor Capacity	•	•		AC/DC Drive	attribute	180	
81	Number of Motor Poles	•	•	•	Motor Data (AC)	attribute	12	PoleCount
		•	•		AC/DC Drive	attribute	181	
82	Excitation Current	•			AC/DC Drive	attribute	182	

83	Rated Motor Voltage	•	•	•	Motor Data (AC)	attribute	7	RatedVoltage
		•	•		AC/DC Drive	attribute	183	
84	Rated Motor Frequency	•	•	•	Motor Data (AC)	attribute	9	RatedFreq
		•	•		AC/DC Drive	attribute	184	
85	Excitation Current Bending Point							
86	Ex. Curr. Lo. Speed Mag.	•	•		AC/DC Drive	attribute	186	
87	Error Gain							
88	Q Axis Control Gain	•	•		AC/DC Drive	attribute	188	
89	Speed Control Gain	•	•		AC/DC Drive	attribute	189	
90	Motor Constant R1	•	•		AC/DC Drive	attribute	190	
91	Motor Constant R2	•	•		AC/DC Drive	attribute	191	
92	Motor Constant L1	•	•		AC/DC Drive	attribute	192	
93	Motor Constant L2	•	•		AC/DC Drive	attribute	193	
94	Motor Constant X	•	•		AC/DC Drive	attribute	194	
95								
96	Auto Tuning Setting/State	•	•		AC/DC Drive	attribute	196	
97	Td Compensation							
98	PWM Change Point							
99	Low-Speed (less than Pr. 98) Carrier Frequency							
	Output Frequency Setting (RAM)	•	•	•	AC/DC Drive	attribute	8	SpeedRef
	Output Frequency Setting (E ² PROM)							
	Output Frequency	•	•	•	AC/DC Drive	attribute	7	SpeedActual
		•	•		AC/DC Drive	attribute	51	
	Output Current	•	•		AC/DC Drive	attribute	50	
	Output Voltage	•	•		AC/DC Drive	attribute	49	
	Special Monitor							
	Special Monitor Selection No.							

PARAMETERS

	Alarm History 1	•	•		AC/DC Drive	attribute	53	
	Alarm History 2	•	•		AC/DC Drive	attribute	54	
	Alarm History 3	•	•		AC/DC Drive	attribute	55	
	Alarm History 4	•	•		AC/DC Drive	attribute	56	
	Alarm History 5	•	•		AC/DC Drive	attribute	57	
	Alarm History 6	•	•		AC/DC Drive	attribute	58	
	Alarm History 7	•	•		AC/DC Drive	attribute	59	
	Alarm History 8	•	•		AC/DC Drive	attribute	60	
	Real Time Status	•	•		AC/DC Drive	attribute	52	
	Operation Mode							
	Parameter All Clear							
	Inverter Reset	•	•	•	Identity	service	5	

Link Parameters (bank 1):

123	Operation Source	•	•	•	Control Supervisor	attribute	5	NetCtrl
		•	•		A200E Extended	attribute	1	
124	Frequency Source	•	•	•	AC/CD Drive	attribute	4	NetRef
		•	•		A200E Extended	attribute	2	
125	Start Up Link	•	•		A200E Extended	attribute	3	
127	EEPROM Enable	•	•		A200E Extended	attribute	4	
145	PU Lang. Switch	•	•		A200E Extended	attribute	5	
155	RT Activated Condition	•	•		A200E Extended	attribute	6	
156	Stall Prevention Selection	•	•		A200E Extended	attribute	7	
157	OL Signal Waiting Time	•	•		A200E Extended	attribute	8	
158	AM Terminal Function Selection	•	•		A200E Extended	attribute	9	
159	Carrier Decrease Selection at Low Speed	•	•		A200E Extended	attribute	10	
200	PRG Time Select	•	•		A200E Extended	attribute	11	

201	PRG Dir 1 Setting	•	•		A200E Extended	attribute	12	
	PRG Freq 1 Setting	•	•		A200E Extended	attribute	13	
	PRG Time 1 Setting	•	•		A200E Extended	attribute	14	
202	PRG Dir 2 Setting	•	•		A200E Extended	attribute	15	
	PRG Freq 2 Setting	•	•		A200E Extended	attribute	16	
	PRG Time 2 Setting	•	•		A200E Extended	attribute	17	
203	PRG Dir 3 Setting	•	•		A200E Extended	attribute	18	
	PRG Freq 3 Setting	•	•		A200E Extended	attribute	19	
	PRG Time 3 Setting	•	•		A200E Extended	attribute	20	
204	PRG Dir 4 Setting	•	•		A200E Extended	attribute	21	
	PRG Freq 4 Setting	•	•		A200E Extended	attribute	22	
	PRG Time 4 Setting	•	•		A200E Extended	attribute	23	
205	PRG Dir 5 Setting	•	•		A200E Extended	attribute	24	
	PRG Freq 5 Setting	•	•		A200E Extended	attribute	25	
	PRG Time 5 Setting	•	•		A200E Extended	attribute	26	
206	PRG Dir 6 Setting	•	•		A200E Extended	attribute	27	
	PRG Freq 6 Setting	•	•		A200E Extended	attribute	28	
	PRG Time 6 Setting	•	•		A200E Extended	attribute	29	
207	PRG Dir 7 Setting	•	•		A200E Extended	attribute	30	
	PRG Freq 7 Setting	•	•		A200E Extended	attribute	31	
	PRG Time 7 Setting	•	•		A200E Extended	attribute	32	
208	PRG Dir 8 Setting	•	•		A200E Extended	attribute	33	
	PRG Freq 8 Setting	•	•		A200E Extended	attribute	34	
	PRG Time 8 Setting	•	•		A200E Extended	attribute	35	

PARAMETERS

209	PRG Dir 9 Setting	•	•		A200E Extended	attribute	36	
	PRG Freq 9 Setting	•	•		A200E Extended	attribute	37	
	PRG Time 9 Setting	•	•		A200E Extended	attribute	38	
210	PRG Dir 10 Setting	•	•		A200E Extended	attribute	39	
	PRG Freq 10 Setting	•	•		A200E Extended	attribute	40	
	PRG Time 10 Setting	•	•		A200E Extended	attribute	41	
211	PRG Dir 11 Setting	•	•		A200E Extended	attribute	42	
	PRG Freq 11 Setting	•	•		A200E Extended	attribute	43	
	PRG Time 11 Setting	•	•		A200E Extended	attribute	44	
212	PRG Dir 12 Setting	•	•		A200E Extended	attribute	45	
	PRG Freq 12 Setting	•	•		A200E Extended	attribute	46	
	PRG Time 12 Setting	•	•		A200E Extended	attribute	47	
213	PRG Dir 13 Setting	•	•		A200E Extended	attribute	48	
	PRG Freq 13 Setting	•	•		A200E Extended	attribute	49	
	PRG Time 13 Setting	•	•		A200E Extended	attribute	50	
214	PRG Dir 14 Setting	•	•		A200E Extended	attribute	51	
	PRG Freq 14 Setting	•	•		A200E Extended	attribute	52	
	PRG Time 14 Setting	•	•		A200E Extended	attribute	53	
215	PRG Dir 15 Setting	•	•		A200E Extended	attribute	54	
	PRG Freq 15 Setting	•	•		A200E Extended	attribute	55	
	PRG Time 15 Setting	•	•		A200E Extended	attribute	56	
216	PRG Dir 16 Setting	•	•		A200E Extended	attribute	57	
	PRG Freq 16 Setting	•	•		A200E Extended	attribute	58	
	PRG Time 16 Setting	•	•		A200E Extended	attribute	59	

217	PRG Dir 17 Setting	•	•		A200E Extended	attribute	60	
	PRG Freq 17 Setting	•	•		A200E Extended	attribute	61	
	PRG Time 17 Setting	•	•		A200E Extended	attribute	62	
218	PRG Dir 18 Setting	•	•		A200E Extended	attribute	63	
	PRG Freq 18 Setting	•	•		A200E Extended	attribute	64	
	PRG Time 18 Setting	•	•		A200E Extended	attribute	65	
219	PRG Dir 19 Setting	•	•		A200E Extended	attribute	66	
	PRG Freq 19 Setting	•	•		A200E Extended	attribute	67	
	PRG Time 19 Setting	•	•		A200E Extended	attribute	68	
220	PRG Dir 20 Setting	•	•		A200E Extended	attribute	69	
	PRG Freq 20 Setting	•	•		A200E Extended	attribute	70	
	PRG Time 20 Setting	•	•		A200E Extended	attribute	71	
221	PRG Dir 21 Setting	•	•		A200E Extended	attribute	72	
	PRG Freq 21 Setting	•	•		A200E Extended	attribute	73	
	PRG Time 21 Setting	•	•		A200E Extended	attribute	74	
222	PRG Dir 22 Setting	•	•		A200E Extended	attribute	75	
	PRG Freq 22 Setting	•	•		A200E Extended	attribute	76	
	PRG Time 22 Setting	•	•		A200E Extended	attribute	77	
223	PRG Dir 23 Setting	•	•		A200E Extended	attribute	78	
	PRG Freq 23 Setting	•	•		A200E Extended	attribute	79	
	PRG Time 23 Setting	•	•		A200E Extended	attribute	80	
224	PRG Dir 24 Setting	•	•		A200E Extended	attribute	81	
	PRG Freq 24 Setting	•	•		A200E Extended	attribute	82	
	PRG Time 24 Setting	•	•		A200E Extended	attribute	83	

PARAMETERS

225	PRG Dir 25 Setting	•	•		A200E Extended	attribute	84	
	PRG Freq 25 Setting	•	•		A200E Extended	attribute	85	
	PRG Time 25 Setting	•	•		A200E Extended	attribute	86	
226	PRG Dir 26 Setting	•	•		A200E Extended	attribute	87	
	PRG Freq 26 Setting	•	•		A200E Extended	attribute	88	
	PRG Time 26 Setting	•	•		A200E Extended	attribute	89	
227	PRG Dir 27 Setting	•	•		A200E Extended	attribute	90	
	PRG Freq 27 Setting	•	•		A200E Extended	attribute	91	
	PRG Time 27 Setting	•	•		A200E Extended	attribute	92	
228	PRG Dir 28 Setting	•	•		A200E Extended	attribute	93	
	PRG Freq 28 Setting	•	•		A200E Extended	attribute	94	
	PRG Time 28 Setting	•	•		A200E Extended	attribute	95	
229	PRG Dir 29 Setting	•	•		A200E Extended	attribute	96	
	PRG Freq 29 Setting	•	•		A200E Extended	attribute	97	
	PRG Time 29 Setting	•	•		A200E Extended	attribute	98	
230	PRG Dir 30 Setting	•	•		A200E Extended	attribute	99	
	PRG Freq 30 Setting	•	•		A200E Extended	attribute	100	
	PRG Time 30 Setting	•	•		A200E Extended	attribute	101	
231	Time of Day Setting	•	•		A200E Extended	attribute	102	
900	FM terminal calibration	•	•		A200E Extended	attribute	103	
901	AM terminal calibration	•	•		A200E Extended	attribute	104	
902	Frequency Voltage Bias (Freq)	•	•		A200E Extended	attribute	105	
	Frequency Voltage Bias (Percent)	•	•		A200E Extended	attribute	106	
903	Frequency Voltage Gain (Freq)	•	•		A200E Extended	attribute	107	

	Frequency Voltage Gain (Percent)	•	•		A200E Extended	attribute	108	
904	Frequency Current Bias (Freq)	•	•		A200E Extended	attribute	109	
	Frequency Current Bias (Percent)	•	•		A200E Extended	attribute	110	
905	Frequency Current Gain (Freq)	•	•		A200E Extended	attribute	111	
	Frequency Current Gain (Percent)	•	•		A200E Extended	attribute	112	

SPECIFICATIONS

9. SPECIFICATIONS

- 1) Power supply
 - Control power: supplied by the inverter.
 - Communication power: supplied by DeviceNet power supply
- 2) Standard
 - conforms to ODVA DeviceNet Specification Release 1.3/1.2 (independently tested by University of Michigan test lab, 12 November 1996); 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 inverters connectable
 - 63 inverters with minimum of one node as a master
- 8) Supported inverters
 - FR-A200E, FR-A100E
- 9) Environmental

Ambient temperature	-10 to 50°C (non-condensing)
Ambient humidity	90% or less (non-condensing)
Altitude	Below 1000m
Vibration	0.6G or less, conforming to JIS-C0912
Protective structure	Open type (IP00), JEM1030

REVISIONS

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

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