FasBAC for Energy
User Manual
Version 2.1.0.1

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1. Introduction

FasBAC for Energy (FasBAC) application reads MMServer to get the meter readings from Carma Industries EMP and Data Logger/Profiler and writes the values to BACnet objects. FasBAC runs as a Win32 service.

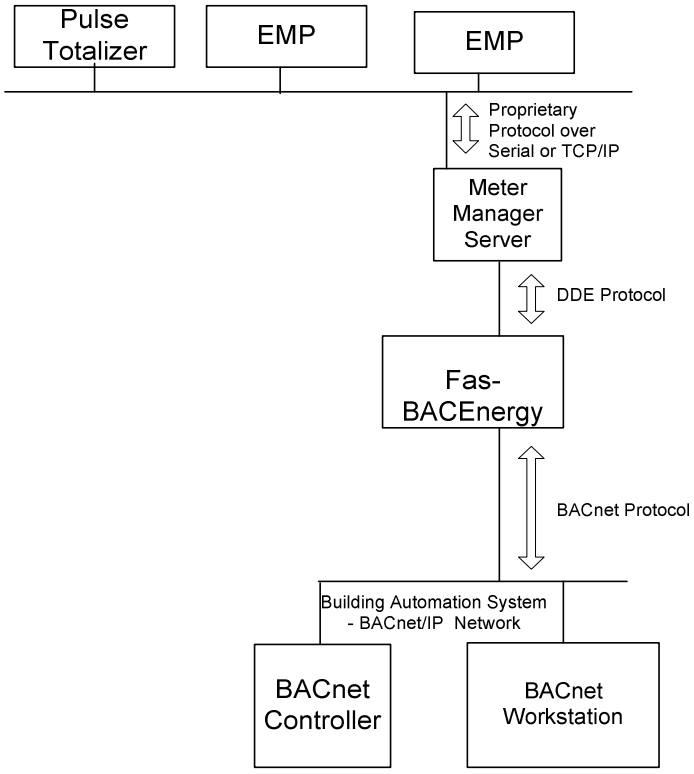

Figure 1. System Architecture

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1.1. Getting data from MMServer

1.1.1. Normal

FasBAC will get data from MMServer either through polling or through advise mechanism. It will then update the present value and reliability attributes of the BACnet objects.

MMServer is a DDE server and FasBAC acts a DDE client. MMServer allows clients to either read or signup for certain DDE items.

Note: Refer to Appendix A for complete list of meter DDE items supported by MMServer and also which ones support advise.

To get the meter data FasBAC will poll the DDE items or sign up for advise if the DDE items support advise mechanism. FasBAC will also allow to poll the DDE items supporting advise by setting the configuration parameter *CarmaDoAdvise* to 0. The timeout of the synchronous reads (polling) can be set through the configuration parameter *CarmaDataPollTimeout*. If signing up for advise MMServer will update FasBAC at the data logging rate defined in MMServer.

In case of communication loss between MMServer and EMP, if the internal logging is enabled in EMP/profiler, MMServer will fetch the data from EMP/Profiler buffer and write multiple records to the log file. When the buffer for a meter has been completely written to the data log file, MMServer will send an advice to FasBAC with the latest data and timestamp.

1.1.2. Handling communication breakdown between MMServer and EMP/Profiler.

FasBAC creates BACnet status objects of type BV for monitoring the status of all meters. The online (normal) value for these meter status objects is 1. FasBAC will periodically poll the communication status DDE item of the EMP's/Profiler's for the meters specified in the configuration file. If the read fails the meter status object value is set to 0 (offline). The BACnet unit's text for 1 and 0 are "Online" and "Offline" respectively.

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In addition to the meter status objects the reliability attribute of BACnet objects corresponding to polling type DDE items will be marked 'Unreliable' if the meter goes offline.

Note: The reliability attribute for BACnet objects corresponding to hot link DDE items (example: Cons, DemW) will not be updated, however the meter status objects will be reflective of actual meter communication state.

1.1.3. Handling communication breakdown between FasBAC and MMServer

If FasBAC looses connection to MMServer it periodically starts sending out Ping DDE item at the rate defined in configuration parameter *CarmaServerPollRate* to detect the MMServer. {The timeout for synchronous read of DDE item 'Ping' (for checking MMServer status) will be separately configurable through configuration parameter *CarmaServerPollTimeout* to allow extra time.

FasBAC creates MMServer_Status BACnet object of type BV to reflect the state of FasBAC's communication state with MMServer. The value of MMServer_Status BACnet object will be set to 0 (offline) in case of communication loss.

Note: The values for other BACnet objects; either the ones created to monitor individual meter status or those actually displaying DDE item values will not be changed.

1.2. FasBAC – BACnet interface

FasBAC acts like a BACnet device that can host BACnet objects, which can be read by other BACnet compliant software /device.

FasBAC can also write to BACnet objects hosted by third party devices.

Depending on the details of the mappings created in the FasBACEnergy.csv file, FasBAC will either internally create and update the BACnet objects or update the external BACnet objects.

FasBAC's BACnet device communication settings can be altered as described in the Configuration section of the user manual.

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1.2.1. Handling MMServer communication errors.

In case of communication loss between MMServer and EMP, the poll data will not be obtained from MMServer, hence values in the mapped BACnet objects will not be updated..

1.3. Error Logging

FasBAC will write appropriate error messages to the Windows Application Event log.

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2. System Requirements

Operating System

Windows 2003 Server, Windows 2000 Server sp3, Windows 2000 Professional sp3 and Windows XP Professional sp2.

PC

Memory: 1 GB

Processor speed: 2 GHz

Hard disk: 60GB

MMServer

Version 0.18 or above running on the same PC as FasBAC.

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3. Install / Uninstall

Install

To install the program; log on to the server with Administrator level access and launch the setup.exe from the compressed package. Follow the instructions of the installer to complete the installation.

Review and change as necessary the FasBAC default configuration settings (refer section 'Parameter Configuration').

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Uninstall

To uninstall Fas-BAC, go to the Windows Control Panel, and launch Add/Remove Programs. Select Fas-BAC for Energy, and click on Remove. Follow the instructions of the uninstall program to complete the removal.

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4. System Setup

MMServer

General

The MMServer should be in the Windows startup group, so that on restart of machine the MMServer starts automatically.

User with Administrator level privileges should be logged on for MMServer to operate.

Logging

The logging feature of MMServer needs to be enabled (using the MMServer user interface) for it to go and fetch values from EMP and fill the data log files.

Units for Data Profilers/Loggers

To be able to map the units from the data profilers/loggers to the BACnet objects use one of the following strings (case sensitive) for units in the config.dat file. If one of the following units is not applicable, then the string used to define units will not be mapped and the corresponding BACnet object will show units as NO_UNITS.

Units string in MMServer's config.dat	**Corresponding BACnet units**
kJ	KILOJOULES
kg	KILOGRAMS
kWh	KILOWATT_HOURS
cuft	CUBIC_FEET
cumeter	CUBIC_METERS
L	LITERS
impGal	IMPERIAL_GALLONS
Gal	US_GALLONS
kVAR	KILOVOLT_AMPERES_REACTIVE
kVA	KILOVOLT_AMPERES

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FasBAC

Perform the following steps immediately after installation is finished:

Check that the FasBACEnergy service is not running.

Add meter data to BACnet object mappings to FasBACEnergy.csv file (refer section ‘Mapping Meter Data to BACnet Objects’)

Start FasBAC (refer section ‘Operations’)

Review any warnings or errors logged in the Windows Application Event log (refer section ‘Log File’) and take corrective action

Review and if necessary change the size of log (refer section ‘Log File’)

Perform the following steps (as necessary) over the duration of using FasBAC:

Review any warnings or errors logged in the Windows Application Event log (refer section ‘Log File’) and take corrective action.

Add or change ‘meter data to BACnet object’ mappings as required.

Note: Changes to FasBACEnergy.csv file become effective after restarting FasBAC.

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5. Operations

FasBAC runs as a Windows service. It starts automatically with the start of the operating system. (In case of a situation where the automatic start functionality needs to be disabled, set the 'startup type' property of the FasBAC service to 'Manual' using the Services control applet in Administrative Tools.)

FasBAC can be started and stopped using the command-line as described below:

Start

1. Launch Command Prompt from Start/All Programs/Accessories Menu
2. Do a change directory to 'c:\Program Files\Fastek\FasBACEnergy'
3. Start the service using the command:

FasBACEnergy.exe /start

Stop

1. Launch Command Prompt from Start/All Programs/Accessories Menu
2. Do a change directory to 'c:\Program Files\Fastek\FasBACEnergy'
3. Stop the service using the command:

FasBACEnergy.exe /stop

Note: An error message "StopService failed: Overlapped I/O operation in progress" message may be displayed in the command-line, please ignore it.

Configure

1. Launch Command Prompt from Start/All Programs/Accessories Menu
2. Do a change directory to 'c:\Program Files\Fastek\FasBACEnergy'
3. Configure the parameters using the command:

*FasBACEnergy.exe /configure <parameter name *> <parameter value>*

* for parameter name and guidelines for their values, refer section 'Parameter Configuration'

Example:

FasBACEnergy.exe /configure CarmaDataPollRate 10

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6. Mapping Meter Data to BACnet Objects

FasBAC uses a simple text file named FasBACEnergy.csv as a database for defining the mapping of DDE items to BACnet objects. The file will use a CSV format. This format may be edited with a simple text editor such as Windows Notepad or by a spreadsheet program such as Microsoft Excel.

Note: changes to FasBACEnergy.csv file become effective after restarting FasBAC.

Each line in the FasBACEnergy.csv file will define a 'meter data to BACnet object' mapping using the following format:

```
<DDE Topic name>, <DDE Item name>, <param1>, <param2>, <param3>,
<multiplier>, <BACnet object name>, <BACnet object type (optional –
check details below)>, <Internal BACnet object flag (optional – check
details below)>
```

DDE Topic name

- MM_EMP or MM_METER (please refer to Appendix A)

DDE Item name

- Use the Appendix A to determine the name of the DDE Item name to be mapped to the BACnet object.

param1, param2 and param3

- Use the following table 1 to determine the values of param1, param2 and param3.

Table 1. DDE Item details for Parameters

DDE Topic	DDE Item	param1	param2	param3
MM_EMP	Refer table 7	emp-id	node-id	
MM_METER	<PwrNodeVA>	meter-id *	<return data tag from table 9>	Phase (range 1 to 'CarmaMaxPhases' setting – table 2)
MM_METER	Refer table 8	meter-id *		

* The meter-id can be max 11 characters in either of the following formats:

E<iii>M<jj> where 'iii' and 'jj' are decimal numbers to identify the EMP (or Pulse Totalizer) and Meter, respectively. Leading zeroes are not required

A<Apartment #> where *Apartment #* is a string with maximum 10 characters

M<Meter #>. where *Meter #* is a string with maximum 10 characters

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Multiplier

- Multiplier – multiplier for DDE item value returned (range 1 to 1000000)

BACnet Object Name

- BACnet objects may be entered using either the object name or the object instance number combined with the device ID
- When hosting a BACnet object internally with FasBAC then the object name should be specified.
- The BACnet object property written will be the Present Value property (85)
- If the object name is used, the object name must be unique on the BACnet network
- Object names will be case sensitive and maximum length is 255 characters
- If the object instance is used, the device ID will be prefixed to the object instance using the pipe symbol (|) as a separator

BACnet Object Type

- If the object instance and device id are used to specify the BACnet object name then the object type will be required. If the object name is used, the object type is optional. If no object type is provided AV object type will be assumed
- The object type is indicated with either AI (Analog Input) or AV (Analog Value). Mappings to BACnet object types AI should only be done if the objects are hosted externally and if the BACnet device supports writing values to AI object types.
- If the object name is used and an object type is specified, the type of the actual object type will be validated

BACnet Internal Object Flag

- To host BACnet objects inside FasBAC, after specifying the type of object (AV or BV), specify value of 1. If not specified the BACnet object will be considered as hosted by external BACnet device.

Comments

- Comments will be prefixed by a double slash
- If using a spreadsheet program to create the file, the double slash prefix must be entered in the first column of the spreadsheet
- Comments may be entered on any line in the file

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Example of fasbacenergy.csv file:

```
//Create each DDE item to BACnet object mapping by providing
//following information in the given order:

//DDE Topic, DDE Item name, param1, param2, param3, multiplier,
//BACnet object name, BACnet object type (optional), Internal BACnet
//identifier(optional)

//please refer to user manual for description of elements listed
//above

//examples of internally hosted BACnet objects

//MM_Meter,Cons,MMeter12,,,1,Meter12Cons,AV,1
//MM_Meter,ConsNow,MMeter12,,,1,Meter12ConsNow,AV,1

//examples of externally hosted BACnet objects

//MM_Meter,DemW,MMeter12,,,1,101|163,AV
//MM_Meter,DemVA,MMeter12,,,1,101|178,AV
//MM_Meter,DemWInst,MMeter12,,,1,101|164,AV
//MM_Meter,DemVAInst,MMeter12,,,1,101|165,AV
//MM_Meter,DemWPres,MMeter12,,,1,101|183,AV
//MM_Meter,DemVAPres,MMeter12,,,1,101|177,AV
//MM_Meter,DemWPk,MMeter12,,,1,101|166,AV
//MM_Meter,DemVAPk,MMeter12,,,1,101|167,AV
//MM_Meter,PwrNodeVA,MMeter12,iPTNode,1,1,101|168,AV
//MM_Meter,PwrNodeVA,MMeter12,iCTNode,1,1,101|169,AV
//MM_Meter,PwrNodeVA,MMeter12,dRMSVoltage,1,1,101|180,AV
//MM_Meter,PwrNodeVA,MMeter12,dRMSCurrent,1,1,101|207,AV
//MM_Meter,PwrNodeVA,MMeter12,dPhaseAngle,1,1,101|222,AV
//MM_Meter,PwrNodeVA,MMeter12,dDemkWInst,1,1,101|237,AV
//MM_Meter,PwrNodeVA,MMeter12,dDemkVAInst,1,1,101|179,AV
//MM_Meter,PwrNodeVA,MMeter12,dPowerFactor,1,1,101|206,AV

//MM_EMP,ScanRMS,1,40,,1,101|221,AV
//MM_EMP,ScanVA,1,40,,1,101|236,AV
//MM_EMP,ScanWSign,1,40,,1,101|185,AV
```

Figure 2. FasBACEnergy.CSV File

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7. Parameter Configuration

Stop the service, change the values of the configuration parameters and then start the service using the instructions described in the section 'Operations'

Note: All changes to FasBAC configuration become effective after restarting FasBAC.

General Settings

To change parameters listed in Table 2 do the following:

Table 2. Configurable Parameters

Name	Description	Range	Default Value
CarmaServerPollRate	Defines the rate at which FasBAC will poll the MMserver when the MMserver is off-line to FasBAC.	1 - 10 minutes	1
CarmaServerPollTimeout	Defines the maximum number of seconds FasBAC will wait for MMServer response during the sync read call to MMServer for "Ping" DDE item.	1-10 seconds	10
CarmaDataPollRate	Defines the rate at which FasBAC will poll MMServer for (non advise) DDE items specified in the csv file	1 - 60 minutes	15
CarmaDataPollTimeout	Defines the maximum number of seconds FasBAC will wait for MMServer response during the sync read call to MMServer for DDE items.	1-10 seconds	10
CarmaMaxPhases	Defines the maximum number of phases	1-10	3
CarmaDoAdvise	Defines the option to enable or disable using the XTYP_ADVREQ feature for certain DDE items in MMServer.	0,1	1
BACnetMedia	Defines the BACnet media.	Ethernet, BACnetIP	BACnetIP
BACnetCommunicationRate	Defines the rate at which FasBAC will send BACnet Who-Has and Write messages.	100 - 1000 milli-seconds	100

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BACnetObjectNameResolveTimeout	Defines the time delay between initialization of BACnet and MMServer communication. This gives time for the BACnet object name resolution to complete before MMServer starts writing to BACnet objects.	1-300 seconds	5
BACnetNotifyOfflineMeter	Defines the option to enable or disable the feature of writing a value of -1 to BACnet objects when the corresponding meter value cannot be read.	0,1	0

BACnet Communication Settings

FasBAC acts as a BACnet device and requires that several BACnet parameters be setup correctly in order to successfully communicate with other BACnet devices / software. Some of these settings must be unique for each BACnet device that resides on the same BACnet network. FasBAC's BACnet communication is based on the parameters located in the BACDOC.INI file. The BACDOC.INI resides in the Windows directory.

Note: In addition to the BACnet communication parameters that must be user configurable for BACnet communication, there are other parameters in the BACDOC.ini file that should not be changed by the user.

To change parameters listed in Table 3 do the following:

1. Open BACDOC.ini file (present in the Windows directory) from Windows Explorer.
2. Change the value of the key in the BACDOC.ini file as described in table 3.
3. Save the BACDOC.ini file and close it.

Table 3. Configurable BACnet Communication Parameters

Name	Description	Range	Default Value
OurInstance	The BACnet device ID. Must be unique for each BACnet device on the same BACnet network. If more than one FasBAC device is on the BACnet network, this value will have to be changed for each device.	1 - MaxBACnetID	64003
OurPeerName	The BACnet device name. Must be unique for each FasBAC device on the same BACnet network. If more than one FasBAC device is on	up to 32 characters (case sensitive)	FASBAC-FOR-ENERGY

	the BACnet network, this value will have to be changed for each device.		
BACnetIPaddress	The IP address of the network interface used with Fas-BAC. Note that the network interface should have a static IP address to avoid having to change this parameter.	N/A	N/A
BACnetIPsubnet	The subnet mask of the network interface used with Fas-BAC.	N/A	N/A
BACnetIPport	The UDP port number to use for BACnet/IP (hex BAC0) This number must be the same for all BACnet devices that must communicate with one another.	1024 - 49151	47808

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8. Log File / Troubleshooting

FasBAC uses the Windows Application Event log for reporting errors and status messages. The message format follows Windows conventions for Windows event logging.

To view the Log File, do the following steps:

1. From the Start Menu, open Control Panel.
2. From Control Panel, open Administrative Tools.
3. From Administrative Tools, open Component Services.
4. In Component Services, expand the Event Viewer and select Application.
5. In the right hand pane view messages with source column having value "FasBACEnergy".

To ensure latest log messages are available, do the following:

1. Right click on the Application (step 4 above) and select Properties.
2. In General tab in the Log size section, select the option 'Override events as needed'.

Event log messages will be generated for the following conditions:

Table 4. Carma METER MANAGER events

Error Description	Action to be taken
Starting FasBACEnergy - Carma METER MANAGER to BACnet service.	None
FasBACEnergy - Carma METER MANAGER to BACnet service has shutdown.	None
Connected to Microsoft Windows DDEML Library.	None
Disconnected from Microsoft Windows DDEML Library.	None
FasBACEnergy was unable to initialize the DDEML library.	FasBACEnergy will not work as a key Windows library (DDEML.dll) is missing.
Established connection to the Carma METER MANAGER Server.	None
Closed connection to the Carma METER MANAGER Server.	None
Carma METER MANAGER Server is on-line.	None. (Carma METER MANAGER Server was

	previously off-line, now it has become on-line)
Carma METER MANAGER Server is off-line.	Check if Carma Meter Manager Server is running.
Lost connection to Carma METER MANAGER Server.	Check if Carma Meter Manager Server is running.
Trying to connect to Carma METER MANAGER Server.	Check if Carma Meter Manager Server is running.
Carma METER MANAGER Server could not read item <*DDE Item name*>.	Carma Meter Manager Server could not read values from EMP for data logging. Check EMP online status.
Read succeeded on Carma METER MANAGER Server item < *DDE Item name* >.	None. (Previously read to this item had failed, now it has succeeded.)
Following error occurred on reading Carma METER MANAGER Server item < *DDE Item name e><DDEML error #><Carma Meter Manager Error # >.*	To get description of DDEML error # refer Appendix C and for Carma Meter Manager Error # refer Appendix D.
Carma METER MANAGER Server item < *DDE Item name* > cannot be read as it has not been configured correctly.	Carma Meter Manager returned an invalid configuration error. Make necessary changes in the FasBACEnergy.csv file or METER MANAGER Server's config.dat file.

Table 5. BACnet events

Error Description	**Action to be taken**
The BACDOC library is not in "windowless" mode. Check the bacdoc.ini file. The service will be shutdown.	Change the settings in the bacdoc.ini file to run the PolarSoft BACDoor library in windowless mode.
BACDOC library initialized.	None.
BACDOC library deinitialized.	None.
Will not be able to write to the BACnet object <*objectname*> as the name is not yet resolved.	Check if the BACnet device is online.
Following error occured while writing to BACnet object <*objectname*>. BACDoor Library Error # <*error #*>.	Check if the BACnet device is online. To get description of BACDoor error # refer Appendix B.
The BACnet object <*objectname*> is on-line.	None. (Previously the

	object was off-line, now it has become on-line.)
The Device ID returned by WhoHas for the BACnet object <*objectname*> does not match the Device ID provided in the FasBACEnergy.csv file hence it is being removed. Any updates received for this object will not be passed on to the BACnet network.	Make the necessary changes in the FasBACEnergy.csv file.
The Object Type returned by WhoHas for BACnet object <*objectname*> does not match the Object Type provided in the FasBACEnergy.csv file hence it is being removed. Any updates received for this object will not be passed on to the BACnet network.	Make the necessary changes in the FasBACEnergy.csv file.
BACDOC Library reported the following Error: Number <*error #*>	Check if the BACnet device is online

Table 6. Configuration File events

Error Description	**Action to be taken**
FasBACEnergy could not open the configuration file: <*filename*>	Make sure the FasBACEnergy.csv file is present in the same directory as the program FasBACEnergy.exe.
Error encountered on line number <*linenumber*> in the FasBACEnergy.csv file.	Make the necessary changes in the FasBACEnergy.csv file
<*metername*> meter name in the FasBACenergy.csv file is invalid.	Make the necessary changes in the FasBACEnergy.csv file

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Appendix A: Supported MMServer DDE Items

The following MMserver DDE items are supported for mapping to BACnet objects.

MM_EMP Topic

For the MM_EMP topic the following values (DDE items) of a particular node of the EMP can be mapped to BACnet objects.

Table 7. MM_EMP Topic Items

Topic Item	Description
ScanRMS	Read instantaneous RMS values at EMP inputs
ScanVA	Read instantaneous VA values at CT/PT inputs of an EMP
ScanWSign	Read instantaneous signed Watt values at CT/PT inputs of an EMP

MM_Meter Topic

For the MM_Meter topic the following values (DDE items) of a particular meter can be mapped to BACnet objects.

Table 8. MM_Meter Topic Items

Topic Item	Description
Cons *	Consumption register value saved in the server at last logging interval
ConsNow *	Consumption register value from unit
DemW *	Watt demand register values saved in the server at last logging interval
DemVA	VA demand register values saved in the server last logging interval
DemWInst	Instantaneous Watt register value for last sensor scan from EMP
DemVAInst	Instantaneous VA register value for last sensor scan from EMP
DemWPres	Present Watt register value from EMP
DemVAPres	Present VA register value from EMP
DemWPk	Peak Watt demand register values from EMP

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DemVAPk	Peak VA demand register values from EMP
PwrNodeVA	Power Node Data Group

* denotes the MMServer DDE items which are also supported by the Data Logger / Profiler.

PwrNodeVA is a special case where its return data tags (see Table 9) are mapped to BACnet objects. The 'N' after the data tag represents the phase number (range 1 to 'CarmaMaxPhases' setting – see table 2).

Table 9. PwrNodeVA DDE item return data tags

iPTNode N
iCTNode N
dRMSVoltage N
dRMSCurrent N
dPhaseAngle N
dDemkWInst N
dDemkVAInst N
dPowerFactor N

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Appendix B: BACDoor OEM Client Error Descriptions

Error #	Error Description
0	Success
-1	NoFreeBuffers
-2	InvalidPort
-3	OpenAdapterFailed
-4	LSLNotFound
-5	InvalidService
-6	CantGetSelector
-7	InvalidPointer
-8	LSAPinUse
-9	NotYetInitialized
-10	CreateThreadFailed
-11	MACDriverNotFound
-100	NoFreeTimers
-101	CantCreateWindow
-102	FailedClassRegistration
-105	MACPNotInstalled
-106	UnknownPDUType
-107	InvalidPDUType
-108	InvalidRequestThisState
-109	NoFreeSpaceAvailable
-110	NoFreeInvokeIDs
-111	Timeout
-112	ReceivedPacketTooLarge
-113	TransmitError
-114	InvalidDestinationAddr
-115	InvalidResponse
-116	AbortReceived
-117	RejectReceived
-118	ErrorReceived
-119	NoMoreSegments
-120	CannotSendSegmentedCACK
-121	TransmitPacketTooLarge
-122	NoPacketsAvailable
-123	InvalidRequestHandle
-124	NoFreeCacheSlots
-125	InvalidTag
-126	InvalidPassword
-127	BIPInitFailed
-128	BIPCantLocateSubnetMask
-130	MSTPInitFailed
-131	TooManyPeers
-132	PeerAlreadyKnown

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-133	MACorRouterAddressTooLong
-134	NotImplemented
-135	PTPInitFailed
-136	InvalidRequest
-137	NoListProvided
-139	BDE_BIPIPorMaskNotInitialized
-204	NoNALSpacketinResult
-205	NoAPDUinResult
-206	BufferSizeExceeded
-998	InhibitTX
-1000	UnknownOS

Appendix C: Windows DDEML Error Descriptions

Error #	Error Description
16384	ADVACKTIMEOUT
16385	BUSY
16386	DATAACKTIMEOUT
16387	DLL_NOT_INITIALIZED
16388	DLL_USAGE
16389	EXECACKTIMEOUT
16390	INVALIDPARAMETER
16391	LOW_MEMORY
16392	MEMORY_ERROR
16393	NOTPROCESSED
16394	NO_CONV_ESTABLISHED
16395	POKEACKTIMEOUT
16396	POSTMSG_FAILED
16397	REENTRANCY
16398	SERVER_DIED
16399	SYS_ERROR
16400	UNADVACKTIMEOUT
16401	UNFOUND_QUEUE_ID

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Appendix D: Carma Meter Manager Server Error Descriptions

Error #	Error Description
0	No Error
-1	Com Error: Could not transmit to local port
-2	Com Error: Could not receive from local port
-3	Com Error: No echo received from EMP/Profiler
-4	Com Error: Timeout for EMP/Profiler response
-5	Com Error: No command echo
-6	Com Error: Could not clear EMP output buffer
-7	Com Error: Local network status error
-8	Com Error: No network query command echo
-9	Com Error: No network timeout command echo
-10	Com Error: Invalid message checksum
-11	Com Error: Invalid data checksum
-12	Com Error: Error checking EMP/Profiler status
-13	Com Error: Receive buffer timeout
-14	Com Error: Local port not available
-15	Com Error: EMP/Profiler response is too long
-16	Com Error: No communication yet with EMP/Profiler
-17	Com Error: Command refused by EMP/Profiler
-18	Com Error: Reply timeout (response too short)
-19	EMP is not configured for TOU
-20	No data for Virtual Meter request
-21	Com Error: Error encoding command
-22	No Virtual Meter element defined
-23	No TOU schedule specified
-24	Com Error: EMP/Profiler communications disabled
-25	No active TOU schedule on EMP
-200	Unknown Item
-201	Item Not Yet Available
-202	Item is XTYP_EXECUTE Only
-203	No XTYP_EXECUTE allowed for Item
-204	No XTYP_ADVISE allowed for Item
-205	Item only valid for Pulse Totalizer
-206	EMP is not configured for sensors

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-207	EMP is not configured for TOU
-208	EMP is not configured for demand
-209	Item not valid for a Pulse Totalizer
-210	Item not valid for a virtual meter
-211	Invalid EMPId
-212	Item not support multiple EMPId
-213	Missing EMPId
-214	Invalid NodeId
-215	Invalid MeterId
-216	Invalid TOU Schedule
-217	Item not configured for local logging
-218	Hot link signup does not support multiple meters
-219	Logging not enabled for meter or data type of hot link request