

PROTOCOL IMPLEMENTATION  
CONFORMANCE  
STATEMENT (PICS)



*AUTO-FLOW CRITICAL ENVIRONMENTS PRODUCT FAMILY*

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**Vendor Name:** American Auto-Matrix

**Product Name:** Auto-Flow Critical Environments Product Family

**Product Model Number:** NB-GPC-FHC x, NB-GPC-LAB x (*x = model variant*)

**Firmware Revision:** 2.00

**BACnet Protocol Revision:** 4

**Product Description:**

Utilizing similar technology found in the popular NB-GPC product family, the Auto-Flow Critical Environments product family are BACnet-compliant lab and fume hood controllers, designed to provide dedicated closed-loop control for laboratory and fume hoods. Utilizing patented control methodologies, Auto-Flow BACnet controllers provide time-critical, life safety control when it is needed the most.

**BACNET STANDARDIZED DEVICE PROFILE:**

- BACnet Operator Workstation (B-OWS)
- BACnet Building Controller (B-BC)
- BACnet Advanced Application Controller (B-AAC)
- BACnet Application Specific Controller (B-ASC)
- BACnet Smart Sensor (B-SS)
- BACnet Smart Actuator (B-SA)
- BACnet Other (B-OTHER)

**BACNET INTEROPERABILITY BUILDING BLOCKS SUPPORTED:**

|          |           |          |
|----------|-----------|----------|
| DS-RP-A  | AE-N-I-B  | DM-DCC-B |
| DS-RP-B  | AE-INFO-B | DM-PT-A  |
| DS-RPM-B | AE-ACK-B  | DM-PT-B  |
| DS-WP-A  | AE-ASUM-B | DM-TS-A  |
| DS-WP-B  | SCHED-I-B | DM-TS-B  |
| DS-WPM-B |           | DM-UTC-B |
|          |           | DM-RD-B  |

**SEGMENTATION CAPABILITY:**

Able to transmit segmented messages  yes  no Window Size:

Able to receive segmented messages  yes  no Window Size:

# STANDARD OBJECT TYPES SUPPORTED

## Dynamically Creatable Objects

None

## Dynamically Deletable Objects

None

## Properties

**Bold** indicates writable properties

*Italics* indicates optional properties

### Device

**object-identifier**  
**object-name**  
object-type  
system-status  
vendor-name  
vendor-id  
model-name  
firmware-revision  
application-software-revision  
protocol-version  
protocol-revision  
protocol-services-supported  
protocol-object-types-supported  
object-list  
max-apdu-length  
segmentation-supported  
**local-time**  
**local-date**  
**utc-offset**  
**daylight-savings-status**  
apdu-timeout  
number-of-apdu-retries  
**max-master**  
**max-info-frames**  
**time-synchronization-  
recipients**  
**device-address-binding**  
database-revision  
*profile-name*

### Analog Input

object-identifier  
**object-name**  
object-type  
present-value  
status-flags  
event-state  
**out-of-service**  
**units**  
**min-pres-value**  
**max-pres-value**  
*reliability*  
*resolution*  
**time-delay**  
**notification-class**  
**high-limit**  
**low-limit**  
**deadband**  
**limit-enable**  
**event-enable**  
*acked-transitions*  
**notify-type**  
*event-time-stamps*  
*profile-name*

### Analog Output

object-identifier  
**object-name**  
object-type  
**present-value**  
status-flags  
event-state  
**out-of-service**  
**units**  
**min-pres-value**  
**max-pres-value**  
priority-array  
**relinquish-default**  
**time-delay**  
**notification-class**  
**high-limit**  
**low-limit**  
**deadband**  
**limit-enable**  
**event-enable**  
*acked-transitions*  
**notify-type**  
*event-time-stamps*  
*profile-name*

### Analog Value

object-identifier  
**object-name**  
object-type  
**present-value**  
status-flags  
event-state  
**out-of-service**  
**units**  
**priority-array**  
**relinquish-default**  
**notification-class**  
**high-limit**  
**low-limit**  
**deadband**  
**limit-enable**  
acked-transitions  
**notify-type**  
event-time-stamps  
profile-name

### Binary Input

object-identifier  
**object-name**  
object-type  
present-value  
status-flags  
event-state  
**out-of-service**  
*reliability*  
**polarity**  
**time-delay**  
**notification-class**  
**alarm-value**  
**event-enable**  
*acked-transitions*  
**notify-type**  
event-time-stamps  
profile-name

### Binary Output

object-identifier  
**object-name**  
object-type  
**present-value**  
status-flags  
event-state  
*reliability*  
**out-of-service**  
**polarity**  
**minimum-off-time**  
**minimum-on-time**  
priority-array  
**relinquish-default**  
**time-delay**  
**notification-class**  
**feedback-value**  
**event-enable**  
*acked-transitions*  
**notify-type**  
event-time-stamps  
profile-name

### Binary Value

object-identifier  
**object-name**  
object-type  
**present-value**  
status-flags  
event-state  
**out-of-service**  
**time-delay**  
*priority-array*  
**relinquish-default**  
**notification-class**  
**alarm-value**  
**event-enable**  
*acked-transitions*  
**notify-type**  
*event-time-stamps*  
*profile-name*

### Calendar

object-identifier  
**object-name**  
object-type  
present-value  
**date-list**  
*profile-name*

### File

object-identifier  
object-name  
object-type  
file-type  
file-size  
modification-date  
**archive**  
**read-only**  
file-access-method  
*profile-name*

Notification Class

object-identifier  
**object-name**  
object-type  
notification-class  
**priority**  
**ack-required**  
**recipient-list**  
*profile-name*

Program

object-identifier  
object-name  
object-type  
program-state  
**program-change**  
*reason-for-halt*  
*description-of-halt*  
program-location  
status-flags  
out-of-service  
*profile-name*

Schedule

object-identifier  
**object-name**  
object-type  
**present-value**  
**effective-period**  
***weekly-schedule***  
***exception-schedule***  
**schedule-default**  
**list-of-object-property-references**  
**priority-for-writing**  
status-flags  
reliability  
out-of-service  
*profile-name*

## NON-STANDARD PROPERTY DECLARATION

This product contains non-standard properties in the following standard objects listed below.

### ANALOG INPUTS

| Identifier | Meaning            | Datatype |
|------------|--------------------|----------|
| 51526      | Input Filter Delay | Unsigned |
| 53062      | Input Offset       | Real     |
| 53832      | Run Hours          | Unsigned |
| 50497      | Enable Alarming    | Boolean  |
| 54100      | Sensor Type        | Unsigned |
| 51017      | GID                | Unsigned |
| 51491      | Input Index        | Unsigned |

### ANALOG OUTPUTS

| Identifier | Meaning         | Datatype |
|------------|-----------------|----------|
| 52558      | Min Scale       | Real     |
| 52568      | Max Scale       | Real     |
| 53077      | Actual Value    | Real     |
| 54612      | Update Time     | Real     |
| 53832      | Run Hours       | Unsigned |
| 50497      | Enable Alarming | Boolean  |
| 51017      | GID             | Unsigned |
| 51491      | Output Index    | Unsigned |

### ANALOG VALUES

| Identifier | Meaning         | Datatype |
|------------|-----------------|----------|
| 50497      | Enable Alarming | Boolean  |

## BINARY INPUTS

| Identifier | Meaning                               | Datatype |
|------------|---------------------------------------|----------|
| 53832      | Run Hours                             | Unsigned |
| 50497      | Enable Alarming                       | Boolean  |
| 54100      | Sensor Type (BI, 1 thru BI, 24 only)  | Unsigned |
| 51017      | GID                                   | Unsigned |
| 51491      | Input Index                           | Unsigned |
| 51526      | Filt Delay (BI,1001thru BI,1008 only) | Unsigned |
| 52548      | Pulse Count Mode                      | Unsigned |
| 52816      | Pulse Accumulated                     | Unsigned |
| 54086      | Pulse Multiplier                      | Real     |
| 54102      | Scaled Pulse Count                    | Real     |

## BINARY OUTPUTS

| Identifier | Meaning         | Datatype |
|------------|-----------------|----------|
| 53077      | Actual Output   | Unsigned |
| 53335      | Pulse Width     | Real     |
| 53832      | Run Hours       | Unsigned |
| 50497      | Enable Alarming | Boolean  |
| 51017      | GID             | Unsigned |
| 51491      | Output Index    | Unsigned |

## BINARY VALUE

| Identifier | Meaning         | Datatype |
|------------|-----------------|----------|
| 50497      | Enable Alarming | Boolean  |

## NOTIFICATION CLASS

| Identifier | Meaning       | Datatype |
|------------|---------------|----------|
| 49457      | Rec 1 Active? | Boolean  |
| 49458      | Rec 2 Active? | Boolean  |
| 49459      | Rec 3 Active? | Boolean  |
| 49460      | Rec 4 Active? | Boolean  |
| 49461      | Rec 5 Active? | Boolean  |

## PROGRAMS

| Identifier | Meaning      | Datatype |
|------------|--------------|----------|
| 42033      | \$1 Register | Unsigned |
| 42052      | \$D Register | Unsigned |
| 42053      | \$E Register | Unsigned |
| 42071      | \$W Register | Unsigned |
| 42062      | \$N Register | Unsigned |
| 42305      | Register A   | NULL     |
| 42306      | Register B   | NULL     |
| 42307      | Register C   | NULL     |
| 42308      | Register D   | NULL     |
| 42309      | Register E   | NULL     |
| 42310      | Register F   | NULL     |
| 42311      | Register G   | NULL     |
| 42312      | Register H   | NULL     |
| 42313      | Register I   | NULL     |
| 42314      | Register J   | NULL     |
| 42315      | Register K   | NULL     |
| 42316      | Register L   | NULL     |
| 42317      | Register M   | NULL     |
| 42318      | Register N   | NULL     |
| 42319      | Register O   | NULL     |
| 42320      | Register P   | NULL     |



## SCHEDULE

| Identifier | Meaning  | Datatype |
|------------|----------|----------|
| 50005      | Occ?     | Boolean  |
| 50007      | Unocc?   | Boolean  |
| 49999      | Warmup?  | Boolean  |
| 50003      | NightSB? | Boolean  |

## DATA LINK LAYER OPTIONS:

- BACnet IP, (Annex J)
- BACnet IP, (Annex J), Foreign Device
- ISO 8802-3, Ethernet (Clause 7)
- ANSI/ATA 878.1, 2.5 Mb. ARCNET (Clause 8)
- ANSI/ATA 878.1, RS-485 ARCNET (Clause 8), baud rate(s):
- MS/TP master (Clause 9), baud rate(s): 9.6k, 19.2k, 38.4k, 76.8k
- MS/TP slave (Clause 9), baud rate(s):
- Point-To-Point, EIA 232 (Clause 10), baud rate(s):
- Point-To-Point, modem, (Clause 10), baud rate(s):
- LonTalk, (Clause 11), medium:
- Other:

## DEVICE ADDRESS BINDING:

Is static device binding supported?  Yes  No

(This is currently necessary for two-way communication with MS/TP slaves and certain other devices.)

## NETWORKING OPTIONS:

- Router, Clause 6 - IP, MS/TP, Ethernet
- Annex H, BACnet Tunneling Router over IP
- BACnet/IP Broadcast Management Device (BBMD)  
Does the BBMD support registrations by Foreign Devices?  Yes  No

## CHARACTER SETS SUPPORTED

Indicating support for multiple character sets does not imply that they can all be supported simultaneously.

- |                                               |                                            |
|-----------------------------------------------|--------------------------------------------|
| <input checked="" type="checkbox"/> ANSI X3.4 | <input type="checkbox"/> ISO 10646 (UCS-4) |
| <input type="checkbox"/> IBM™/Microsoft™ DBCS | <input type="checkbox"/> ISO 10646 (UCS-2) |
| <input type="checkbox"/> JIS C 6226           | <input type="checkbox"/> ISO 8859-1        |

## GATEWAY

This product does not support gateway functionality for any types of non-BACnet equipment/network(s).