

**BACnet Protocol Implementation Conformance Statement
Lumisys - ELINK**



Date: 2/4/2004

Vendor Name: Lumisys,

Product Name: ELINK

Product Model Number: ELINK

Applications Software Version: ExecB ELINK Firmware Revision: 1.72

BACnet Protocol Revision: 2

Product Description:

Lumisys' new E-Link module is a microprocessor-based controller designed for two-way communications between Lumisys control system and a BACnet or Modbus network. BACnet objects are spawned within the device as a result of downloading graphical control programs. The ELINK will automatically function as a BBMD if the BACnet/IP port is enabled and a BDT is received that contains its own IP address. The ELINK can be configured to simultaneously function as a BACnet/Internet Protocol Packet-Assembler-Disassembler according to Annex H.3. It also supports one PTP connection with dial-up modem support.

BACnet Standardized Device Profile (Annex L): B-AAC

List all BACnet Interoperability Building Blocks Supported (Annex K):

DS-RP-A	AE-N-I-B	SCHED-I-B	T-VMT-I-B	DM-DDB-A
DS-RP-B	AE-ACK-B		T-ATR-B	DM-DDB-B
DS-RPM-B	AE-ASUM-B			DM-DOB-A
DS-WP-A	AE-INFO-B			DM-DOB-B
DS-WP-B				DM-DCC-B
DS-WPM-B				DM-PT-A
DS-COV-A				DM-PT-B
DS-COV-B				DM-TS-B
DS-COVU-A				DM-UTC-B
DS-COVU-B				DM-RD-B
				DM-LM-B

Segmentation Capability:

Able to transmit segmented messages

Window Size _____

Able to receive segmented messages

Window Size _____

Standard Object Types Supported:

On a separate page, please list each standard Object Type supported (i.e., an object of this type may be present in the

product). For each standard Object Type supported provide the following data:

- 1) Whether objects of this type are dynamically creatable using BACnet's CreateObject service
- 2) Whether objects of this type are dynamically deletable using BACnet's CreateObject service
- 3) List of the optional properties supported
- 4) List of all properties that are writable where not otherwise required by this standard
- 5) List of proprietary properties and for each its property identifier, datatype, and meaning
- 6) List of any property range restrictions

(List starts on page 2 ...)

Analog Value (PAR):

1. Creatable? NO
2. Deletable? NO
3. Optional properties supported:
 - acked-transitions
 - cov-increment
 - deadband
 - description
 - event-enable
 - event-time-stamps
 - high-limit
 - limit -enable
 - low-limit
 - notification-class
 - notify-type
 - priority-array
 - reliability
 - relinquish-default
 - time-delay
4. Writeable properties:
 - cov-increment
 - deadband
 - description
 - event-enable
 - high-limit
 - limit -enable
 - low-limit
 - notification-class
 - notify-type
 - out-of-service
 - present-value
 - relinquish-default
 - time-delay
 - units
5. Proprietary properties: None
6. Range restrictions:

description	limited to 50 octets in length
present-value	limited by min-pres-value and max-pres-value properties
relinquish-default	limited by min-pres-value and max-pres-value properties
notification-class	must be valid notification-class
time-delay	0 to 4294967295

Analog Value (RS):

1. Creatable? NO
2. Deletable? NO
3. Optional properties supported:
 reliability
4. Writeable properties:
 out-of-service
 present-value
 units
5. Proprietary properties: None
6. Range restrictions: None

Analog Value (STAT):

1. Creatable? NO
2. Deletable? NO
3. Optional properties supported:
 - acked-transitions
 - cov-increment
 - deadband
 - description
 - event-enable
 - event-time-stamps
 - high-limit
 - limit -enable
 - low-limit
 - notification-class
 - notify-type
 - reliability
 - time-delay
4. Writeable properties
 - cov-increment
 - deadband
 - description
 - event-enable
 - high-limit
 - limit -enable
 - low-limit
 - notification-class
 - notify-type
 - out-of-service
 - time-delay
 - units
5. Proprietary properties: None
6. Range restrictions:
 - description limited to 50 octets in length
 - notification-class must be valid notification-class
 - time-delay 0 to 4294967295

Binary Value (PAR):

1. Creatable? NO
2. Deletable? NO
3. Optional properties supported:
 - acked-transitions
 - active-text
 - alarm-value
 - change-of-state-count
 - change-of-state-time
 - description
 - elapsed-active-time
 - event-enable
 - event-time-stamps
 - inactive-text
 - minimum-off-time
 - minimum-on-time
 - notification-class
 - notify-type
 - priority-array
 - reliability
 - relinquish-default
 - time-delay
 - time-of-active-time-reset
 - time-of-state-count-reset
4. Writeable properties:
 - active-text
 - alarm-value
 - change-of-state-count
 - description
 - elapsed-active-time
 - event-enable
 - inactive-text
 - minimum-off-time
 - minimum-on-time
 - notification-class
 - notify-type
 - out-of-service
 - present-value
 - relinquish-default
 - time-delay
5. Proprietary properties: None
6. Range restrictions:

active-text	limited to 50 octets in length
change-of-state-count	0 to 4294967295
description	limited to 50 octets in length
elapsed-active-time	0 to 4294967295
inactive-text	limited to 50 octets in length
minimum-off-time	0 to 4294967295

BACnet Protocol Implementation Conformance Statement
Lumisys - ELINK



minimum-on-time	0 to 4294967295
notification-class	must be valid notification-class
time-delay	0 to 4294967295

Binary Value (CLOCK):

1. Creatable? NO
2. Deletable? NO
3. Optional properties supported:
 - acked-transitions
 - active-text
 - alarm-value
 - change-of-state-count
 - change-of-state-time
 - description
 - elapsed-active-time
 - event-enable
 - event-time-stamps
 - inactive-text
 - minimum-off-time
 - minimum-on-time
 - notification-class
 - notify-type
 - priority-array
 - reliability
 - relinquish-default
 - time-delay
 - time-of-active-time-reset
 - time-of-state-count-reset
4. Writeable properties
 - active-text
 - alarm-value
 - change-of-state-count
 - description
 - elapsed-active-time
 - event-enable
 - inactive-text
 - minimum-off-time
 - minimum-on-time
 - notification-class
 - notify-type
 - out-of-service
 - present-value
 - relinquish-default
 - time-delay
5. Proprietary properties: None
6. Range restrictions:

active-text	limited to 50 octets in length
change-of-state-count	0 to 4294967295
description	limited to 50 octets in length
elapsed-active-time	0 to 4294967295
inactive-text	limited to 50 octets in length
minimum-off-time	0 to 4294967295

BACnet Protocol Implementation Conformance Statement
Lumisys - ELINK



minimum-on-time	0 to 4294967295
notification-class	must be valid notification-class
time-delay	0 to 4294967295

Binary Value (STAT):

1. Creatable? NO
2. Deletable? NO
3. Optional properties supported:
 - acked-transitions
 - active-text
 - alarm-value
 - change-of-state-count
 - change-of-state-time
 - description
 - elapsed-active-time
 - event-enable
 - inactive-text
 - minimum-off-time
 - minimum-on-time
 - notification-class
 - notify-type
 - reliability
 - time-delay
 - time-of-active-time-reset
 - time-of-state-count-reset
4. Writeable properties
 - active-text
 - alarm-value
 - change-of-state-count
 - description
 - elapsed-active-time
 - event-enable
 - inactive-text
 - minimum-off-time
 - minimum-on-time
 - notification-class
 - notify-type
 - out-of-service
 - time-delay
5. Proprietary properties: None
6. Range restrictions:

active-text	limited to 50 octets in length
change-of-state-count	0 to 4294967295
description	limited to 50 octets in length
elapsed-active-time	0 to 4294967295
inactive-text	limited to 50 octets in length
minimum-off-time	0 to 4294967295
minimum-on-time	0 to 4294967295
notification-class	must be valid notification-class
time-delay	0 to 4294967295

Device:

1. Creatable? NO
2. Deletable? NO
3. Optional properties supported:
 - active-vt-sessions
 - apdu-segment-timeout
 - daylight-savings-status
 - description
 - list-of-session-keys
 - local-date
 - local-time
 - location
 - max-info-frames
 - max-master
 - time-synchronization-recipients
 - utc-offset
 - vt-classes -supported
4. Writeable properties
 - apdu-segment-timeout
 - apdu-timeout
 - description
 - local-date
 - local-time
 - location
 - max-info-frames
 - max-master
 - number-of-apdu-retries
 - object-identifier
 - object-name
 - time-synchronization-recipients
 - utc-offset
5. Proprietary properties: None
6. Range restrictions:

description	limited to 50 octets in length
location	limited to 50 octets in length
max-master	1 to 127
object-identifier	must be a valid device identifier
object-name	limited to 50 octets in length
utc-offset	-780 to 780

File:

1. Creatable? NO
2. Deletable? NO
3. Optional properties supported:
 - description
4. Writeable properties
 - archive
 - description
 - file-type
5. Proprietary properties: None
6. Range restrictions:
 - description limited to 50 octets in length
 - file-type limited to 50 octets in length

Multi-State Value (PAR):

1. Creatable? NO
2. Deletable? NO
3. Optional properties supported:
 - acked-transitions
 - alarm-values
 - description
 - event-enable
 - event-time-stamps
 - fault-values
 - notification-class
 - notify-type
 - priority-array
 - reliability
 - relinquish-default
 - state-text
 - time-delay
4. Writeable properties
 - alarm-values
 - description
 - event-enable
 - fault-values
 - notification-class
 - notify-type
 - out-of-service
 - present-value
 - relinquish-default
 - time-delay
5. Proprietary properties: None
6. Range restrictions:

description	limited to 50 octets in length
notification-class	must be valid notification-class
present-value	must be valid state
relinquish-default	must be valid state
time-delay	0 to 4294967295

Multi-State Value (CLOCK):

1. Creatable? NO
2. Deletable? NO
3. Optional properties supported:
 - acked-transitions
 - alarm-values
 - description
 - event-enable
 - event-time-stamps
 - fault-values
 - notification-class
 - notify-type
 - priority-array
 - reliability
 - relinquish-default
 - state-text
 - time-delay
4. Writeable properties
 - alarm-values
 - description
 - event-enable
 - fault-values
 - notification-class
 - notify-type
 - out-of-service
 - present-value
 - relinquish-default
 - time-delay
5. Proprietary properties: None
6. Range restrictions:

description	limited to 50 octets in length
notification-class	must be valid notification-class
present-value	must be valid state
relinquish-default	must be valid state
time-delay	0 to 4294967295

Multi-State Value (STAT):

1. Creatable? NO
2. Deletable? NO
3. Optional properties supported:
 - acked-transitions
 - alarm-values
 - description
 - event-enable
 - event-time-stamps
 - fault-values
 - notification-class
 - notify-type
 - priority-array
 - reliability
 - state-text
 - time-delay
4. Writeable properties
 - alarm-values
 - description
 - event-enable
 - fault-values
 - notification-class
 - notify-type
 - out-of-service
 - time-delay
5. Proprietary properties: None
6. Range restrictions:

description	limited to 50 octets in length
notification-class	must be valid notification-class
present-value	must be valid state
time-delay	0 to 4294967295

Notification Class:

1. Creatable? NO
2. Deletable? NO
3. Optional properties supported:
 - description
4. Writeable properties
 - ack-required
 - description
 - priority
 - recipient-list
5. Proprietary properties: None
6. Range restrictions:
 - description limited to 50 octets in length
 - recipient-list limited to 5 BACnetDestinations

Program:

1. Creatable? NO
2. Deletable? NO
3. Optional properties supported:
 - description
 - description-of-halt
 - instance-of
 - program-location
 - reason-for-halt
 - reliability
4. Writeable properties
 - description
 - program-change
 - program-location
5. Proprietary properties: None
6. Range restrictions:
 - description limited to 50 octets in length
 - program-location limited to 50 octets in length

Schedule (UNS):

1. Creatable? NO
2. Deletable? NO
3. Optional properties supported:
 - priority-for-writing
 - description
 - exception-schedule
 - priority-array
 - relinquish-default
 - weekly-schedule
4. Writeable properties
 - description
 - effective-period
 - exception-schedule
 - present-value
 - priority-for-writing
 - relinquish-default
 - weekly-schedule
5. Proprietary properties: None
6. Range restrictions:
 - description limited to 50 octets in length
 - exception-schedule limited to 30 BACnetSpecialEvents,
 each being limited to 6 BACnetTimeValues
 - present-value 0 to 4294967295
 - relinquish-default 0 to 4294967295
 - weekly-schedule limited to 6 BACnetTimeValues per BACnetDailySchedule

Trend-log:

1. Creatable? NO
2. Deletable? NO
3. Optional properties supported:
 - acked-transitions
 - client-cov-increment
 - cov-resubscription-interval
 - current-notify-time
 - description
 - event-enable
 - event-time-stamps
 - log-device-object-property
 - log-interval
 - notification-class
 - notification-threshold
 - notify-type
 - previous-notify-time
 - records-since-notification
 - start-time
 - stop-time
4. Writeable properties
 - buffer-size
 - client-cov-increment
 - cov-resubscription-interval
 - description
 - event-enable
 - log-enable
 - log-interval
 - notification-class
 - notification-threshold
 - notify-type
 - record-count
 - start-time
 - stop-time
 - stop-when-full
 - total-record-count
5. Proprietary properties: None
6. Range restrictions:

description	limited to 50 octets in length
log-interval	0 to 4294967295
notification-class	must be valid notification-class
notification-threshold	0 to 4294967295
record-count	can only be written to 0
total-record-count	can only be written to 0

Data Link Layer Options:

- x BACnet IP, (Annex J)
 - o Able to register as a Foreign Device
- x ISO 8802-3, Ethernet (Clause 7)
 - o ANSI/ATA 878.1, 2.5 Mb ARCNET (Clause 8)
- x ANSI/ATA 878.1, RS-485 ARCNET (Clause 8) baud rate(s) **156k baud**
- x MS/TP master (Clause 9), baud rate(s): **9600, 19200, 38400, 76800**
- o MS/TP slave (Clause 9), baud rate(s):
- x Point-To-Point, EIA 232 (Clause 10), baud rate(s): **9600, 19200, 38400, 57600, 115200**
- x Point-To-Point, modem, (Clause 10), baud rate(s): **9600, 19200, 38400, 57600, 115200**
- o LonTalk, (Clause 11), medium: _____
- o Other:

Device Address Binding Methods Supported:

- x Send Who-Is, receive I-Am (BIBB DM-DDB-A)
- x Receive Who-Is, send I-Am (BIBB DM-DDB-B)
- x Send Who-Has, receive I-Have (BIBB DM-DOB-A)
- x Receive Who-Has, send I-Have (BIBB DM-DOB-B)
- x Manual configuration of recipient device's network number and MAC address.
- o None of the above

Networking Options:

- x Router, Clause 6 - List all routing configurations, e.g., ARCNET -Ethernet, Ethernet-MS/TP, etc.
Ethernet-UDP/IP, Ethernet-PTP, BACnet/IP-UDP/IP, BACnet/IP -PTP, Ethernet-BACnet/IP, Ethernet-BACnet/IP-UDP/IP, Ethernet-BACnet/IP -PTP, ARCNET-UDP/IP, ARCNET-PTP, Ethernet-ARCNET, Ethernet-ARCNET-UDP/IP, Ethernet-ARCNET-PTP, BACnet/IP-ARCNET, BACnet/IP-ARCNET-UDP/IP, BACnet/IP -ARCNET-PTP, Ethernet-BACnet/IP -ARCNET, Ethernet-BACnet/IP-ARCNET-UDP/IP, Ethernet-BACnet/IP-ARCNET-PTP, MS/TP-UDP/IP, MS/TP-PTP, Ethernet-MS/TP, Ethernet-MS/TP-UDP/IP, Ethernet-MS/TP-PTP, BACnet/IP -MS/TP, BACnet/IP-MS/TP-UDP/IP, BACnet/IP-MS/TP-PTP, Ethernet-BACnet/IP -MS/TP, Ethernet-BACnet/IP-MS/TP-UDP/IP, Ethernet-BACnet/IP-MS/TP-PTP, ARCNET-MS/TP, ARCNETMS/TP-UDP/IP, ARCNET-MS/TP-PTP, Ethernet-ARCNET-MS/TP, Ethernet-ARCNET-MS/TPUDP/IP, Ethernet-ARCNET-MS/TP-PTP, BACnet/IP-ARCNET-MS/TP, BACnet/IP -ARCNETMS/TP-UDP/IP, BACnet/IP -ARCNET-MS/TP-PTP, Ethernet-BACnet/IP -ARCNET-MS/TP, Ethernet-BACnet/IP-ARCNET-MS/TP-UDP/IP, Ethernet-BACnet/IP -ARCNET-MS/TP-PTP
- x Annex H.3, BACnet Tunneling Router over UDP/IP
- x BACnet/IP Broadcast Messaging Device (BBMD)
 - Does the BBMD support registrations by Foreign Devices? x Yes o No

Data Link Layer Options:

Character Sets Supported:

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

x ANSI X3.4 x IBM /Microsoft DBCS x ISO 8859-1
x ISO 10646 (UCS-2) x ISO 10646 (ICS-4) x JIS C 6226

If this product is a communication gateway, describe the non-BACnet equipment/networks(s) that the gateway supports:

Lumisys Open protocol, Modbus