

Model FHC50 Fume Hood Controller

Model FHM10 Fume Hood Monitor

BACnet[®] MS/TP Communications

Date: April 7, 2010

Vendor Name: TSI Inc.

Product Name: Fume Hood Controller

Product Model Number: FHC50-BAC / FHM10-BAC

Applications Software Version: 1.0

Firmware Revision: 1.0

BACnet Protocol Revision: 2

Product Description:

TSI's Fume Hood Monitor continuously measures average fume hood face velocity, while TSI's Fume Hood Controller provides a closed-loop VAV control system for proper lab hood containment. The controller assures safety by responding quickly during sash movement, or to disturbances within the sash plane, to maintain a constant face velocity and contain hazardous chemicals. The controller provides opportunities for energy savings, lower fan brake horsepower, smaller chillers and lower duct work cost by reducing the volume of air exhausted from a hood when the sash is not fully open. This model controller is capable of acting as a stand-alone device or as part of a building automation system via BACnet[®] MS/TP protocol.

BACnet Standardized Device Profile (Annex L):

- 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)

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

DS-RP-B	DM-DDB-B
DS-WP-B	DM-DOB-B
DS-RPM-B	DM-DCC-B

Segmentation Capability:

Segmented requests not supported

Segmented responses not supported

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Standard Object Types Supported:

	Dynamically Createable	Dynamically Deletable	Optional Properties Supported	Writable Properties (Data Type)
Analog Input	No	No		
Analog Value	No	No		Present_Value (Real)
Binary Input	No	No	Active_Text, Inactive_Text	
Binary Value	No	No	Active_Text, Inactive_Text	Present_Value (Enumerated)
Multi-state Input	No	No	State_Text	
Multi-state Value	No	No	State_Text	Present_Value (Unsigned Int)
Device Object	No	No		Object Name (Char String) Max Master (Unsigned Int)

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): 76.8k 38.4k, 19.2k, 9600 bps
- 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? (This is currently necessary for two-way communication with MS/TP slaves and certain other devices.) Yes No

Networking Options:

- Router, Clause 6 - List all routing configurations, e.g., ARCNET-Ethernet, Ethernet-MS/TP, etc.
- Annex H, BACnet Tunneling Router over IP
- BACnet/IP Broadcast Management Device (BBMD)

Character Sets Supported:

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

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

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

Not Applicable

BACnet® MS/TP Object Set

Feature	Object Type	Device Instance	Unit	Range	Read / Write	Notes
Face Velocity	Analog Input	1	fpm	0 to 1000	R	
			m/s	0 to 5.08		
Flow Rate	Analog Input	2	cfm	0 to 10000	R	
			m ³ /h	0 to 16990		
			l/s	0 to 4719		
Damper or Valve Position	Analog Input	3	%	0 to 100	R	FHC50 only
Sash Position Percent	Analog Input	4	%	0 to 100	R	FHC50 only
Sash Open Area	Analog Input	5	ft ²	0 to 1000	R	FHC50 only
			m ²	0 to 93		
MAC Address**	Analog Value	1	-	1 to 127	R/W	Communications will be lost until front-end updated with new MAC Address
MAC ID**	Analog Value	2	N/A	1 to 999	R/W	
Normal Face Velocity Setpoint	Analog Value	3	fpm	0, 60 to 1000	R/W	FHC50 only
			m/s	0, 0.03 to 5.08		
Setback Face Velocity Setpoint	Analog Value	4	fpm	0, 60 to 1000	R/W	FHC50 only
			m/s	0, 0.03 to 5.08		
Normal Low Face Velocity Alarm Setpoint	Analog Value	5	fpm	0, 5 to 980	R/W	
			m/s	0, 0.03 to 4.98		
Normal High Face Velocity Alarm Setpoint	Analog Value	6	fpm	0, 80 to 1000	R/W	
			m/s	0, 0.42 to 5.08		
Setback Low Face Velocity Alarm Setpoint	Analog Value	7	fpm	0, 5 to 980	R/W	
			m/s	0, 0.03 to 4.98		
Setback High Face Velocity Alarm Setpoint	Analog Value	8	fpm	0, 80 to 1000	R/W	
			m/s	0, 0.42 to 5.08		
Normal Flow Setpoint	Analog Value	9	cfm	0 to 10000	R/W	FHC50 only
			m ³ /h	0 to 16990		
			l/s	0 to 4719		
Setback Flow Setpoint	Analog Value	10	cfm	0 to 10000	R/W	FHC50 only
			m ³ /h	0 to 16990		
			l/s	0 to 4719		
Normal Low Flow Alarm Setpoint	Analog Value	11	cfm	0 to 10000	R/W	
			m ³ /h	0 to 16990		
			l/s	0 to 4719		
Normal High Flow Alarm Setpoint	Analog Value	12	cfm	0 to 10000	R/W	
			m ³ /h	0 to 16990		
			l/s	0 to 4719		
Setback Low Flow Alarm Setpoint	Analog Value	13	cfm	0 to 10000	R/W	
			m ³ /h	0 to 16990		
			l/s	0 to 4719		
Setback High Flow Alarm Setpoint	Analog Value	14	cfm	0 to 10000	R/W	
			m ³ /h	0 to 16990		
			l/s	0 to 4719		
Min. Damper Position	Analog Value	15	%	0 to 100	R/W	FHC50 only
Max. Damper Position	Analog Value	16	%	0 to 100	R/W	FHC50 only

Feature	Object Type	Device Instance	Unit	Range	Read / Write	Notes
Minimum Flow Setpoint	Analog Value	17	cfm	0 to 10000	R/W	FHC50 only
			m ³ /h	0 to 16990		
			l/s	0 to 4719		
Maximum Flow Setpoint	Analog Value	18	cfm	0 to 10000	R/W	FHC50 only
			m ³ /h	0 to 16990		
			l/s	0 to 4719		
Setback Damper Position Setpoint	Analog Value	19	%	0 to 100	R/W	FHC50 only
High Sash Position Alarm Setpoint	Analog Value	20	%	0, 10 to 105	R/W	
Low Velocity Alarm Status	Binary Input	1	0: Inactive 1: Active	0;1	R	
High Velocity Alarm Status	Binary Input	2	0: Inactive 1: Active	0;1	R	
Low Flow Alarm Status	Binary Input	3	0: Inactive 1: Active	0;1	R	
High Flow Alarm Status	Binary Input	4	0: Inactive 1: Active	0;1	R	
High Sash Position Alarm Status	Binary Input	7	0: Inactive 1: Active	0;1	R	
Velocity Sensor Error Status	Binary Input	8	0: Inactive 1: Active	0;1	R	
Data Error Status	Binary Input	9	0: Inactive 1: Active	0;1	R	
Setback Status	Binary Input	10	0: Inactive 1: Active	0;1	R	
Emergency Status	Binary Input	11	0: Inactive 1: Active	0;1	R	
Auto Baud	Multi-State	1	0: No Action 1 Set Auto Baud	0;1	R/W	Controller will reset variable to 0 after setting baud rate.
Emergency Mode	Multi-State	2	1: Exit Emergency Mode 2: Enter Emergency Mode 3: Normal	1; 2; 3	R/W	
Setback Mode	Multi-State	3	1: Exit Setback Mode 2: Enter Setback Mode 3: Normal	1; 2; 3	R/W	
Units Value	Multi-State	4	1: fpm and cfm 2: m/s and m ³ /h 3: m/s & l/s	1; 2; 3	R/W	

* The units are based on the value of the Units Value object. When the Units Value is set to 1 the units are in English form. When the Units Value is set to 2 or 3 the units are metric. English is the default value.

** The Device Instance defaults 1, The device index is the Device Instance multiplied by 1000 plus the MAC Address The default device index is therefore 1001.

Specifications subject to change without notice.

TSI Incorporated – 500 Cardigan Road, Shoreview, MN 55126 U.S.A

USA Tel: +1 800 874 2811

E-mail: answers@tsi.com

Website: www.tsi.com

UK Tel: +44 149 4 459200

E-mail: tsiuk@tsi.com

Website: www.tsiinc.co.uk

France Tel: +33 491 11 87 64

E-mail: tsifrance@tsi.com

Website: www.tsiinc.fr

Germany Tel: +49 241 523030

E-mail: tsigmbh@tsi.com

Website: www.tsiinc.de

India Tel: +91 80 41132470

E-mail: tsi-india@tsi.com

China Tel: +86 10 8260 1595

E-mail: tsibeijing@tsi.com

Singapore Tel: +65 6595 6388

E-mail: tsi-singapore@tsi.com



Contact your local TSI Distributor or visit our website www.tsi.com for more detailed specifications.



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