

BACnet Protocol Implementation Conformance Statement

Date: 2 January 2013

Vendor Name: WindowMaster A/S

Product Name: BACnet MotorLink™ MotorController

Product Model Number: WBA11M. MSTP BACnet-IP Modbus

Configuration version (CSV): 1.00bL

Firmware Revision: V2.01k

BACnet Protocol Revision: 4

Product Description:

The WindowMaster WBA11M is a motor controller with 4 motor lines used for controlling MotorLink™ window actuators. The WBA11M also have inputs for push button for manually operating the 4 motor lines independently.

MotorLink™ technology is a state of the art digital data communication between actuators and control unit using 3 wires for power and communication.

MotorLink™ technology enables position control and feedback of each group of motors. Up to 4 window actuators in a group are connected in parallel and runs 100% synchronous. The actual position is stored in non-volatile memory in each actuator, so position information is maintained in case of loss of power. Up to 2 additional locking actuators can be connected to a MotorLink™ motor line.

WBA11M also supports operation with different actuator speeds:

- One low speed setting for automatic operation.
- One higher speed setting for manual control which is giving a slightly higher noise level and a faster response to user input.

WBA11M is for instance used in WindowMasters MotorController type WBC 16M 040A, WBC 16M 080B,

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)

BACnet Interoperability Building Blocks Supported (Annex K):

BIBB	Description
DS-RP-B	Data Sharing – ReadProperty - B
DS-RPM-B	Data Sharing – ReadPropertyMultiple - B
DS-WP-B	Data Sharing – WriteProperty - B
DS-WPM-B	Data Sharing – WritePropertyMultiple - B
DS-COV-B	Data Sharing – Change of value – B
AE-ACK-B	Alarm and Event – Acknowledge - B
AE-N-I-B	Alarm and Event – Notification Internal-B
AE-INFO-B	Alarm and Event – Information-B
DM-DDB-A	Device Management – Dynamic Device Binding – A
DM-DDB-B	Device Management – Dynamic Device Binding – B
DM-DOB-B	Device Management – Dynamic Object Binding – B
DM-DCC-B	Device Management – Device Communication Control –B
DM-TS-B	Device Management – TimeSynchronization-B

Segmentation Capability:

- Segmented requests supported Window Size _____
- Segmented responses supported Window Size _____

Standard Object Types Supported:

Object instantiation is static; i.e. objects cannot be created or deleted. Refer to table at end of this document for object details.

Property	Object Type								
	Device	Binary			Analog			Multi-state	
		In	Value	Out	In	Value	Out	In	Value
Object Identifier	✓	✓	✓	✓	✓	✓	✓	✓	✓
Object Name	✓	✓	✓	✓	✓	✓	✓	✓	✓
Object Type	✓	✓	✓	✓	✓	✓	✓	✓	✓
Description	✓	✓	✓	✓	✓	✓	✓	✓	✓
System Status	✓								
Device Online Status	✓								
Vendor Name	✓								
Vendor Identifier	✓								
Model Name	✓								
Firmware Revision	✓								
Application Software Version	✓								
location	✓								
Protocol Version	✓								
Protocol Revision	✓								
Protocol Services Supported	✓								
Protocol Object Types Supported	✓								
Object List	✓								
Max APDU Length	✓								
Segmentation Support	✓								
APDU Timeout	✓								
Number APDU Retries	✓								
Max Master	MSTP								
Max Info Frames	MSTP								
Device Address Binding	✓								
Database Revision	✓								
Active cov subscriptions	-								
Present Value		✓	✓	✓	✓	✓	✓	✓	✓
Status Flags		✓	✓	✓	✓	✓	✓	✓	✓
Event State		✓	✓	✓	✓	✓	✓	✓	✓
Reliability		✓	✓	✓	✓	✓	✓	✓	✓
Out-of-Service		✓	✓	✓	✓	✓	✓	✓	✓
Inactive Text		✓	✓	✓					
Active Text		✓	✓	✓					
Number of states								✓	✓
State text								✓	✓
Units					✓	✓	✓		
Priority Array			✓	✓*		✓	✓*		✓*
Relinquish Default			✓	✓*		✓	✓*		✓*
COV Increments					✓	✓	✓*		
Time delay		✓	-	✓		✓	✓	-	-
Notification Class		✓	-	✓		✓	✓	-	-
High limit					✓	✓	✓		
Low limit					✓	✓	✓		
Limit Enable					✓	✓	✓		
Deadband					✓	✓	✓		
Alarm value		✓	-	-					
Alarm values								-	-
Fault values								-	-
Event Enable		✓	-	✓	✓	✓	✓	-	-
Notify Type		✓	-	✓	✓	✓	✓		
Acked transitions					✓	✓	✓		
Event time stamps					✓	✓	✓		

* For commandable values only

(✓) means Value not right, - means not implemented yet

Analog Output Objects Instance Summary:

ID	Objects Name	Description	Unit	Present Value Access
AO 1	Max_Position_Input_Line_1	Sets the maximum allowed position for motor line 1	Percent	C
AO 2	Max_Position_Input_Line_2	Sets the maximum allowed position for motor line 2	Percent	C
AO 3	Max_Position_Input_Line_3	Sets the maximum allowed position for motor line 3	Percent	C
AO 4	Max_Position_Input_Line_4	Sets the maximum allowed position for motor line 4	Percent	C
AO 5	Auto_Position_Line_1	Sets the target position with auto speed for motor line 1	Percent	C
AO 6	Auto_Position_Line_2	Sets the target position with auto speed for motor line 2	Percent	C
AO 7	Auto_Position_Line_3	Sets the target position with auto speed for motor line 3	Percent	C
AO 8	Auto_Position_Line_4	Sets the target position with auto speed for motor line 4	Percent	C
AO 9	Hand_Relative_Position_Line_1	Hand relative position for motor line 1	Percent	C
AO 10	Hand_Relative_Position_Line_2	Hand relative position for motor line 2	Percent	C
AO 11	Hand_Relative_Position_Line_3	Hand relative position for motor line 3	Percent	C
AO 12	Hand_Relative_Position_Line_4	Hand relative position for motor line 4	Percent	C
AO 13	Hand_Absolute_Position_Line_1	Set the target position of motor line 1 using Hand speed	Percent	C
AO 14	Hand_Absolute_Position_Line_2	Set the target position of motor line 2 using Hand speed	Percent	C
AO 15	Hand_Absolute_Position_Line_3	Set the target position of motor line 3 using Hand speed	Percent	C
AO 16	Hand_Absolute_Position_Line_4	Set the target position of motor line 4 using Hand speed	Percent	C

Binary Output Objects Instance Summary:

ID	Objects Name	Description	Active / inactive Text	Present Value Access
BO 1	Close_All	Set that all motor lines must be closed	Close all motor lines / Inactive	C
BO 2	Auto_Off	Set whether automatic control is active	Automatic control disabled / Automatic control enabled	C
BO 3	Service	Set to disable all actuator movements	Movements not allowed / Movements allowed	C
BO 4	Close_Line_1	Set that motor line 1 must be closed	Motor line must be closed / Normal operation	C
BO 5	Close_Line_2	Set that motor line 2 must be closed	Motor line must be closed / Normal operation	C
BO 6	Close_Line_3	Set that motor line 3 must be closed	Motor line must be closed / Normal operation	C
BO 7	Close_Line_4	Set that motor line 4 must be closed	Motor line must be closed / Normal operation	C
BO 8	Disable_Hand_Line_1	Set to disable manual control for motor line 1	Disable manual control / Enable manual control	C
BO 9	Disable_Hand_Line_2	Set to disable manual control for motor line 2	Disable manual control / Enable manual control	C
BO 10	Disable_Hand_Line_3	Set to disable manual control for motor line 3	Disable manual control / Enable manual control	C
BO 11	Disable_Hand_Line_4	Set to disable manual control for motor line 4	Disable manual control / Enable manual control	C
BO 12	Disable_Auto_Line_1	Set to disable automatic control for motor line 1	Disable automatically control / Enable automatically control	C
BO 13	Disable_Auto_Line_2	Set to disable automatic control for motor line 2	Disable automatically control / Enable automatically control	C
BO 14	Disable_Auto_Line_3	Set to disable automatic control for motor line 3	Disable automatically control / Enable automatically control	C
BO 15	Disable_Auto_Line_4	Set to disable automatic control for motor line 4	Disable automatically control / Enable automatically control	C

ID	Objects Name	Description	Active / inactive Text	Present Value Access
BO 16	Clear_Hand_Timer_Line_1	Clears the timer for manual movement of motor line 1 When cleared automatic control takes precedence	Clear/expire timer / No action	C
BO 17	Clear_Hand_Timer_Line_2	Clears the timer for manual movement of motor line 2 When cleared automatic control takes precedence	Clear/expire timer / No action	C
BO 18	Clear_Hand_Timer_Line_3	Clears the timer for manual movement of motor line 3 When cleared automatic control takes precedence	Clear/expire timer / No action	C
BO 19	Clear_Hand_Timer_Line_4	Clears the timer for manual movement of motor line 4 When cleared automatic control takes precedence	Clear/expire timer / No action	C

Analog Input Objects Instance Summary:

ID	Objects Name	Description	Unit	Present Value Access
AI 1	Hand_Position_Output_Line_1	Local input command cascade output for motor line 1	Percent	R
AI 2	Hand_Position_Output_Line_2	Local input command cascade output for motor line 2	Percent	R
AI 3	Hand_Position_Output_Line_3	Local input command cascade output for motor line 3	Percent	R
AI 4	Hand_Position_Output_Line_4	Local input command cascade output for motor line 4	Percent	R
AI 5	Actual_Position_Line_1	Contains the actual position for Line 1	Percent	R
AI 6	Actual_Position_Line_2	Contains the actual position for Line 2	Percent	R
AI 7	Actual_Position_Line_3	Contains the actual position for Line 3	Percent	R
AI 8	Actual_Position_Line_4	Contains the actual position for Line 4	Percent	R
AI 9	Actual_Max_Position_Line_1	Contains the maximum allowed position of Line 1	Percent	R
AI 10	Actual_Max_Position_Line_2	Contains the maximum allowed position of Line 1	Percent	R
AI 11	Actual_Max_Position_Line_3	Contains the maximum allowed position of Line 1	Percent	R
AI 12	Actual_Max_Position_Line_4	Contains the maximum allowed position of Line 1	Percent	R
AI 13	No_Of_Actuators_Detected_Line_1	Indicates no of actuators detected on Line 1		R
AI 14	No_Of_Actuators_Detected_Line_2	Indicates no of actuators detected on Line 2		R
AI 15	No_Of_Actuators_Detected_Line_3	Indicates no of actuators detected on Line 3		R
AI 16	No_Of_Actuators_Detected_Line_4	Indicates no of actuators detected on Line 4		R
AI 17	BaseBoard_HW_Type	This object contains information about the baseboard hardware type. 17 (= 11 hex): WBA11M.		R
AI 18	BaseBoard_SW_Version	This object contains information about the baseboard software version. The hexadecimal representation corresponds to the baseboard firmware version label. E.g. 164 = A4 hex, is firmware version A4.		R

Binary Input Objects Instance Summary:

ID	Objects Name	Description	Active / inactive Text	Present Value Access
BI 1	Watchdog_Timeout_Line_1	Indicates Watchdog timeout on line 1	Watchdog timeout / No timeout	R
BI 2	Watchdog_Timeout_Line_2	Indicates Watchdog timeout on line 2	Watchdog timeout / No timeout	R
BI 3	Watchdog_Timeout_Line_3	Indicates Watchdog timeout on line 3	Watchdog timeout / No timeout	R
BI 4	Watchdog_Timeout_Line_4	Indicates Watchdog timeout on line 4	Watchdog timeout / No timeout	R
BI 5	Communication_Error_Line_1	Indicates communication error status for Line 1	Communication error / No communication error	R
BI 6	Communication_Error_Line_2	Indicates communication error status for Line 2	Communication error / No communication error	R
BI 7	Communication_Error_Line_3	Indicates communication error status for Line 3	Communication error / No communication error	R
BI 8	Communication_Error_Line_4	Indicates communication error status for Line 4	Communication error / No communication error	R
BI 9	Closed_Line_1	Indicates Closed / Not closed status for actuators on Line 1	All actuators at their closed position / Not closed	R
BI 10	Closed_Line_2	Indicates Closed / Not closed status for actuators on Line 2	All actuators at their closed position / Not closed	R
BI 11	Closed_Line_3	Indicates Closed / Not closed status for actuators on Line 3	All actuators at their closed position / Not closed	R
BI 12	Closed_Line_4	Indicates Closed / Not closed status for actuators on Line 4	All actuators at their closed position / Not closed	R
BI 13	Hand_Operation_Line_1	Indicates Hand operation Status for line 1	Hand operation active / Not Hand operation	R
BI 14	Hand_Operation_Line_2	Indicates hand operation Status for line 2	Hand operation active / Not Hand operation	R
BI 15	Hand_Operation_Line_3	Indicates hand operation Status for line 3	Hand operation active / Not Hand operation	R
BI 16	Hand_Operation_Line_4	Indicates hand operation Status for line 4	Hand operation active / Not Hand operation	R
BI 17	Error_Line_1	Indicates error condition for Line 1	Error detected / No error	R
BI 18	Error_Line_2	Indicates error condition for Line 2	Error detected / No error	R
BI 19	Error_Line_3	Indicates error condition for Line 3	Error detected / No error	R
BI 20	Error_Line_4	Indicates error condition for Line 4	Error detected / No error	R
BI 21	MotorController_Error	MotorController Error Status	Motor controller error / No error	R
BI 22	Heat_Smoke_Emergency	Heat and smoke Emergency	Emergency active / Emergency not active	R
BI 23	Heat_Smoke_Emergency_Close	Heat and smoke Emergency Close	Emergency close active / Emergency close not active	R
BI 24	Heat_Smoke_Failure	Heat and smoke failure	Heat and smoke failure / No heat and smoke failure	R
BI 25	Heat_Smoke_OK	Heat and smoke ok	Heat and smoke OK / Heat and smoke not OK	R
BI 26	Heat_Smoke_Battery_Power_Operation	Heat and smoke Battery Power operation	Battery power operation / Normal Power	R
BI 27	Heat_Smoke_Link_Error	Heat and Smoke link error	Link communication failure / Link communication ok	R
BI 28	Heat_Smoke_Link_Incoming_Error	Heat and smoke link Daisy chain incoming error state	Link incoming error bit / No incoming error bit	R

Multi-state Input Objects Instance Summary:

ID	Objects Name	Description	Present Value Access
MI 1	Mode_Of_Operation_Line_1	<p>Mode of operation for the motor line:</p> <ol style="list-style-type: none"> 1. Only maximum opening limit active: Both hand operation and automatic operation are disabled. 2. Only hand operation. Automatic operation is disabled either by the Disable_Auto_Line_X object or temporarily for a period of time (set by non-volatile parameter) due to the motor line has been operated by hand. 3. Only automatic operation: Hand operation is disabled. 4. Normal: Both hand and automatic operation are enabled. 5. Emergency: Motor line operated by a heat and smoke emergency input. No other operation possible. 6. Emergency closed: Motor line operated by a heat and smoke emergency close input. No other operation possible. 7. Close: Close command active. Hand and automatic operation are disabled. 8. Open: Open command active. Hand and automatic operation are disabled. 9. Position locked: Service input object active. No operation possible. 10. Manually operated. No operation possible. E.g. due the locking actuator(s) being in service position. 11. Disabled: The motor line is disabled by non-volatile parameter. 	R
MI 2	Mode_Of_Operation_Line_2	See Mode_Of_Operation_Line_1	R
MI 3	Mode_Of_Operation_Line_3	See Mode_Of_Operation_Line_1	R
MI 4	Mode_Of_Operation_Line_4	See Mode_Of_Operation_Line_1	R
MI 5	Motor_Status_Line_1	<p>This object contains the motor line status:</p> <ol style="list-style-type: none"> 1. Normal operation. 2. Under configuration: The motor line is being configured. The actuator(s) will not move. 3. Hand operation blocking: A hand operation blocked state is pending, but in this state hand operation is still possible. 4. Hand operation blocked: It is not possible to operate the motor line by hand operation commands (hand operation disabled). 	R
MI 6	Motor_Status_Line_2	See Motor_Status_Line_1	R
MI 7	Motor_Status_Line_3	See Motor_Status_Line_1	R
MI 8	Motor_Status_Line_4	See Motor_Status_Line_1	R
MI 9	Movement_Line_1	<p>This object contains the actuator movement status:</p> <ol style="list-style-type: none"> 1. Normal: Actuator configuration is valid and no problems detected during last operation of the actuators. 2. Configuration error: Inconsistency between non-volatile parameters and actual actuators detected or configuration ongoing. 3. Obstacle detected during opening: Problem detected during last opening operation of the actuators. 4. Obstacle detected during closing: Problem detected during last closing operation of the actuators. 	R
MI 10	Movement_Line_2	See Movement_Line_1	R
MI 11	Movement_Line_3	See Movement_Line_1	R
MI 12	Movement_Line_4	See Movement_Line_1	R
MI 13	Locking_Actuators_Detected_Line_1	<p>This object contains the detected locking actuator configuration:</p> <ol style="list-style-type: none"> 1. No Locking actuator present. 2. 1 Locking actuator has been found on the motor line. 3. Not valid. 4. 2 Locking actuators have been found on the motor line. 	R
MI 14	Locking_Actuators_Detected_Line_2	See Locking_Actuators_Detected_Line_1	R
MI 15	Locking_Actuators_Detected_Line_3	See Locking_Actuators_Detected_Line_1	R
MI 16	Locking_Actuators_Detected_Line_4	See Locking_Actuators_Detected_Line_1	R

ID	Objects Name	Description	Present Value Access
MI 17	Heat_Smoke_Link_State	This object contains information about the heat and smoke daisy chained communication link. 1 = No priority override. 2 = Close. 3 = Open. 4 = Open (and Close). 5 = Emergency Close. 6 = Emergency Close (and close). 7 = Emergency Close (and open). 8 = Emergency Close (and open and close). 9 = Emergency Open. 10 = Emergency Open (and close). 11 = Emergency Open (and open). 12 = Emergency Open (and open and Close). 13 = Emergency Open (and emg. close). 14 = Emergency Open (and emg. close and close). 15 = Emergency Open (and emg. close and open). 16 = Emergency Open (and emg. close and open and close).	R

Binary Value Objects Instance Summary:

ID	Objects Name	Description	Active / inactive Text	Present Value Access
BV 1	Lock_Actuator_Blocked_Is_Closed_Line_1	This non-volatile parameter sets whether obstacles during locking situation must be judged as a mal function or a normal situation on line 1	Use overcurrent or switch / Use switch	W (Note 1)
BV 2	Use_Local_Input_Line_1	This non-volatile parameter sets whether local input must control motor line 1 or only transmitted	Transmit only / Use and transmit	W (Note 1)
BV 3	Lock_Actuator_Blocked_Is_Closed_Line_2	This non-volatile parameter sets whether obstacles during locking situation must be judged as a mal function or a normal situation on line 2	Use overcurrent or switch / Use switch	W (Note 1)
BV 4	Use_Local_Input_Line_2	This non-volatile parameter sets whether local input must control motor line 2 or only transmitted	Transmit only / Use and transmit	W (Note 1)
BV 5	Lock_Actuator_Blocked_Is_Closed_Line_3	This non-volatile parameter sets whether obstacles during locking situation must be judged as a mal function or a normal situation on line 3	Use overcurrent or switch / Use switch	W (Note 1)
BV 6	Use_Local_Input_Line_3	This non-volatile parameter sets whether local input must control motor line 3 or only transmitted	Transmit only / Use and transmit	W (Note 1)
BV 7	Lock_Actuator_Blocked_Is_Closed_Line_4	This non-volatile parameter sets whether obstacles during locking situation must be judged as a mal function or a normal situation on line 4	Use overcurrent or switch / Use switch	W (Note 1)
BV 8	Use_Local_Input_Line_4	This non-volatile parameter sets whether local input must control motor line 4 or only transmitted	Transmit only / Use and transmit	W (Note 1)
BV 9	Retransmit_Local_Input_Line_1	This non-volatile parameter determines whether the local input is only sent when the status is changed or also sent cyclically.	Do not retransmit unchanged status / Retransmit status	W (Note 1)
BV 10	Retransmit_Local_Input_Line_2	This non-volatile parameter determines whether the local input is only sent when the status is changed or also sent cyclically.	Do not retransmit unchanged status / Retransmit status	W (Note 1)
BV 11	Retransmit_Local_Input_Line_3	This non-volatile parameter determines whether the local input is only sent when the status is changed or also sent cyclically.	Do not retransmit unchanged status / Retransmit status	W (Note 1)
BV 12	Retransmit_Local_Input_Line_4	This non-volatile parameter determines whether the local input is only sent when the status is changed or also sent cyclically.	Do not retransmit unchanged status / Retransmit status	W (Note 1)

Present Value Access types Legend: R = Read-only, W (Note1) = Writeable, C = Commandable. Commandable values supports priority arrays 16 relinquish defaults.

Note1: Object contains parameter/configuration data stored in flash memory. All data changes lead to all motor lines going into configuration mode for some seconds. Object should not be destination for any kind of cyclic write scheme.

Analog Value Objects Instance Summary:

ID	Objects Name	Description	Unit	Present Value Access
AV 1	Hand_Speed_Line_1	This non-volatile parameter sets the speed of the actuators during hand operation	Percent	W (Note 1)
AV 2	Automatic_Speed_Line_1	This non-volatile parameter sets the speed of the actuators during automatic operation	Percent	W (Note 1)
AV 3	Heat_Smoke_Speed_Line_1	This non-volatile parameter sets the speed of the actuators during Heat and Smoke operation	Percent	W (Note 1)
AV 4	Max_Position_Comfort_Line_1	This non-volatile parameter sets the maximum opening allowed during normal (comfort) operation	Percent	W (Note 1)
AV 5	Max_Position_Heat_Smoke_Line_1	This non-volatile parameter sets the maximum opening allowed during Heat and Smoke operation	Percent	W (Note 1)
AV 6	Lock_Actuator_Hand_Speed_Line_1	This non-volatile parameter sets the speed of the locking actuators during hand operation	Percent	W (Note 1)
AV 7	Lock_Actuator_Auto_Speed_Line_1	This non-volatile parameter sets the speed of the locking actuators during automatic operation	Percent	W (Note 1)
AV 8	Lock_Actuator_Heat_Smoke_Speed_Line_1	This non-volatile parameter sets the speed of the locking actuators during Heat and Smoke operation	Percent	W (Note 1)
AV 9	Lock_Actuator_Service_Position_Line_1	This non-volatile parameter sets the service position of the actuator when the locking actuator is in service position		W (Note 1)
AV 10	Hand_Time_Out_Line_1	This non-volatile parameter sets the duration of time after hand operation, where automatic commands are ignored	Minutes	W (Note 1)
AV 11	Hand_Speed_Line_2	This non-volatile parameter sets the speed of the actuators during hand operation	Percent	W (Note 1)
AV 12	Automatic_Speed_Line_2	This non-volatile parameter sets the speed of the actuators during automatic operation	Percent	W (Note 1)
AV 13	Heat_Smoke_Speed_Line_2	This non-volatile parameter sets the speed of the actuators during Heat and Smoke operation	Percent	W (Note 1)
AV 14	Max_Position_Comfort_Line_2	This non-volatile parameter sets the maximum opening allowed during normal (comfort) operation	Percent	W (Note 1)
AV 15	Max_Position_Heat_Smoke_Line_2	This non-volatile parameter sets the maximum opening allowed during Heat and Smoke operation	Percent	W (Note 1)
AV 16	Lock_Actuator_Hand_Speed_Line_2	This non-volatile parameter sets the speed of the locking actuators during hand operation	Percent	W (Note 1)
AV 17	Lock_Actuator_Auto_Speed_Line_2	This non-volatile parameter sets the speed of the locking actuators during automatic operation	Percent	W (Note 1)
AV 18	Lock_Actuator_Heat_Smoke_Speed_Line_2	This non-volatile parameter sets the speed of the locking actuators during Heat and Smoke operation	Percent	W (Note 1)
AV 19	Lock_Actuator_Service_Position_Line_2	This non-volatile parameter sets the service position of the actuator when the locking actuator is in service position		W (Note 1)
AV 20	Hand_Time_Out_Line_2	This non-volatile parameter sets the duration of time after hand operation, where automatic commands are ignored	Minutes	W (Note 1)
AV 21	Hand_Speed_Line_3	This non-volatile parameter sets the speed of the actuators during hand operation	Percent	W (Note 1)
AV 22	Automatic_Speed_Line_3	This non-volatile parameter sets the speed of the actuators during automatic operation	Percent	W (Note 1)
AV 23	Heat_Smoke_Speed_Line_3	This non-volatile parameter sets the speed of the actuators during Heat and Smoke operation	Percent	W (Note 1)

ID	Objects Name	Description	Unit	Present Value Access
AV 24	Max_Position_Comfort_Line_3	This non-volatile parameter sets the maximum opening allowed during normal (comfort) operation	Percent	W (Note 1)
AV 25	Max_Position_Heat_Smoke_Line_3	This non-volatile parameter sets the maximum opening allowed during Heat and Smoke operation	Percent	W (Note 1)
AV 26	Lock_Actuator_Hand_Speed_Line_3	This non-volatile parameter sets the speed of the locking actuators during hand operation	Percent	W (Note 1)
AV 27	Lock_Actuator_Auto_Speed_Line_3	This non-volatile parameter sets the speed of the locking actuators during automatic operation	Percent	W (Note 1)
AV 28	Lock_Actuator_Heat_Smoke_Speed_Line_3	This non-volatile parameter sets the speed of the locking actuators during Heat and Smoke operation	Percent	W (Note 1)
AV 29	Lock_Actuator_Service_Position_Line_3	This non-volatile parameter sets the service position of the actuator when the locking actuator is in service position		W (Note 1)
AV 30	Hand_Time_Out_Line_3	This non-volatile parameter sets the duration of time after hand operation, where automatic commands are ignored	Minutes	W (Note 1)
AV 31	Hand_Speed_Line_4	This non-volatile parameter sets the speed of the actuators during hand operation	Percent	W (Note 1)
AV 32	Automatic_Speed_Line_4	This non-volatile parameter sets the speed of the actuators during automatic operation	Percent	W (Note 1)
AV 33	Heat_Smoke_Speed_Line_4	This non-volatile parameter sets the speed of the actuators during Heat and Smoke operation	Percent	W (Note 1)
AV 34	Max_Position_Comfort_Line_4	This non-volatile parameter sets the maximum opening allowed during normal (comfort) operation	Percent	W (Note 1)
AV 35	Max_Position_Heat_Smoke_Line_4	This non-volatile parameter sets the maximum opening allowed during Heat and Smoke operation	Percent	W (Note 1)
AV 36	Lock_Actuator_Hand_Speed_Line_4	This non-volatile parameter sets the speed of the locking actuators during hand operation	Percent	W (Note 1)
AV 37	Lock_Actuator_Auto_Speed_Line_4	This non-volatile parameter sets the speed of the locking actuators during automatic operation	Percent	W (Note 1)
AV 38	Lock_Actuator_Heat_Smoke_Speed_Line_4	This non-volatile parameter sets the speed of the locking actuators during Heat and Smoke operation	Percent	W (Note 1)
AV 39	Lock_Actuator_Service_Position_Line_4	This non-volatile parameter sets the service position of the actuator when the locking actuator is in service position		W (Note 1)
AV 40	Hand_Time_Out_Line_4	This non-volatile parameter sets the duration of time after hand operation, where automatic commands are ignored	Minutes	W (Note 1)
AV 41	Actual_Position_Min_Transmit_Interval	This non-volatile parameter sets the minimum retransmit interval of Actual Position for all motor lines	Seconds	W (Note 1)
AV 42	Objects_Receive_Monitor_Time_Out	This non-volatile parameter determines how often updates on monitored objects must be received	Minutes	W (Note 1)

Present Value Access types Legend: R = Read-only, W (Note1) = Writeable (Note1), C = Commandable. Commandable values supports priority arrays 16 relinquish defaults.

Note1: Object contains parameter/configuration data stored in flash memory. All data changes lead to all motor lines going into configuration mode for some seconds. Object should not be destination for any kind of cyclic write scheme.

Multi-state Value Objects Instance Summary:

ID	Objects Name	Description	Present Value Access
MV 1	Expected_No_Of_Actuators_Line_1	<p>WBA11M examines the actual actuator configuration on the motor line. The controller in each MotorLink™ actuator includes information about how many fellow actuators that is needed in order to have a valid configuration.</p> <p>This non-volatile parameter determines how to handle discrepancies in the actuator configuration. Please note that normally actuators are exchanging actual position in order to keep synchronised positions - independent of tolerances and different loads. If the positions differ the actuators will automatically wait for the slowest one. If one or more actuators fail to respond, the operation is stopped in order to avoid damage on the window. This synchronisation feature is used if more actuators are needed in order to operate a large or heavy window. If more windows - each equipped with a single actuator (-1) are connected to the same motor line, this synchronisation feature is disabled. Depending on the demand for detection of configuration or run time failures, non-volatile parameters must be selected in order to fit the expected number of actuators or a don't care value, where no check of the number of actuators is in action.</p> <p>Valid values are: 1: Line disabled 2: 1 single-actuator (-1) 3: 2 not synchronised single-actuators (-1) 4: 3 not synchronised single-actuators (-1) 5: 4 not synchronised single-actuators (-1) 6-13: Normal (use value in window actuators) 14: Don't care 1 to 4 not synchronised single-actuators (-1) 15: Normal (use value in window actuators) 16: Normal (use value in window actuators, <u>if no actuators are present an error is indicated</u>)</p> <p>Default value: "Don't care".</p> <p>Attention</p> <ol style="list-style-type: none"> 1. Windows may be damaged if the actuators mounted on them are of an invalid combination and the controller is being run with the "Don't care" parameter value. Always ensure a valid combination before switching on the power to the controller. 2. When configured with the "Don't care" value, the MotorController is unable to detect and report an error in case of invalid combinations, including the situation where no actuators are connected to the MotorLine or when some or all actuators connected malfunction. This is particularly important where the MotorController is used in Smoke panels such as the WSC xxM. Always ensure to configure the MotorController with the parameter value representing the combination of actuators actually connected to the MotorLine. 	W (Note 1)
MV 2	Expected_No_Of_Lock_Actuators_Line_1	<p>This non-volatile parameter determines the expected configuration of locking actuators.</p> <p>Possible values are: 1: None: No locking actuators are expected. 2: 1 locking actuator is expected. 3: 2 locking actuators are expected. 3-13: Not used. 14: Don't care: Any number of locking actuators are accepted.</p>	W (Note 1)
MV 3	Expected_No_Of_Actuators_Line_2	See Expected_No_Of_Actuators_Line_1	W (Note 1)

ID	Objects Name	Description	Present Value Access
MV 4	Expected_No_Of_Lock_Actuators_Line_2	See Expected_No_Of_Lock_Actuators_Line_1	W (Note 1)
MV 5	Expected_No_Of_Actuators_Line_3	See Expected_No_Of_Actuators_Line_1	W (Note 1)
MV 6	Expected_No_Of_Lock_Actuators_Line_3	See Expected_No_Of_Lock_Actuators_Line_1	W (Note 1)
MV 7	Expected_No_Of_Actuators_Line_4	See Expected_No_Of_Actuators_Line_1	W (Note 1)
MV 8	Expected_No_Of_Lock_Actuators_Line_4	See Expected_No_Of_Lock_Actuators_Line_1	W (Note 1)
MV 9	Objects_To_Monitor	This non-volatile parameter determines which objects to monitor for cyclic updates. 1. None: No objects are monitored. 2. Maximum position: The maximum position object for each motor line is monitored. 3. Close: The close object for each motor line is monitored. 4. Max. position and close: The maximum position object and the close object for each motor line are monitored.	W (Note 1)
MV 10	Line_Communication_Error_Threshold	Sporadic communication errors can appear in the communication between WEA11M and the MotorLink™ actuators. This non-volatile parameter determines how tolerant the WBA11M must be before an error is transmitted. Range: 1. Commissioning: Any disturbance is handled as an error. 2. Normal: Normal tolerance towards sporadic errors. 3. High: High tolerance towards sporadic errors – to be used in noisy environments. 4. Very high: Even higher tolerance towards sporadic errors – to be used in very noisy environments. 5. Disabled: No communication errors shown.	W (Note 1)

Present Value Access types Legend: R = Read-only, W (Note1) = Writeable, C = Commendable. Commendable values supports priority arrays 16 relinquish defaults.

Note1: Object contains parameter/configuration data stored in flash memory. All data changes lead to all motor lines going into configuration mode for some seconds. Object should not be destination for any kind of cyclic write scheme.

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): Auto, 2400, 4800, 9600, 19200, 38400, 76800, 115200
- MS/TP slave (Clause 9), baud rate(s): Auto, 2400, 4800, 9600, 19200, 38400, 76800, 115200
- 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 Tunnelling 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.

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