PG-102-100-AA BACnet MS/TP to Modbus RTU Protocol Converter

PG-102-100-AA is highly powerful, superior, completely configurable and productive Building & Industrial Automation gateway for integrators to effortlessly interface devices to networks in commercial buildings and industrial plants.

PG-102-100-AA Gateway model supports BACnet MS/TP and Modbus RTU protocols. It is a Bi-directional Converter that can be configured as a Client and/or a Server on either protocol interface.

When configured as a Modbus RTU client, the PG-102-100-AA can read data from your Modbus RTU devices and publish it as BACnet MS/TP data. Also, it can write commands sent from the BACnet MS/TP side to the Modbus RTU devices.

When configured as a BACnet MS/TP client, the PG-102-100-AA can read data from your BACnet MS/TP devices and publish it as Modbus RTU data. Also, it can write commands sent from the Modbus RTU side to the BACnet MS/TP devices.

The PG-102-100-AA can be configured to behave as a server on both Modbus RTU and BACnet MS/TP interfaces. This mode is useful when data exchange is required between a Modbus RTU client (for eg. SCADA) and a BACnet IP client (for eg. a Building Management System).

The PG-102-100-AA can be configured to behave as a client on both Modbus RTU and BACnet MS/TP interfaces.

PG-102-100-AA gateways have benefitted system integrators worldwide with its powerful line of gateways. Additionally, PG-102-100-AA gateway runs the same protocol conversion software on a productive and cost efficient platform backed by the experience, engineering expertise and technically proven support that integrators have come to expect from PG-102-100-AA.

Features

- Ability to interface upto 1000 points
- DIN rail mount optional
- DIP switches to select baud rate or node ID on the fly
- Multi-configuration capability
- BACnet COV support for fast data communication while reducing the traffic over a BACnet network

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Specifications

Environment	Operating Temperature: -40 to 75° C (-40 to 167°F)	
	Relative Humidity:5-90% RH non-condensing	
Power Requirements	9-30 VDC or 12-24 VAC	
	Current Draw @ 12V about 250Ma	
Physical Dimensions(HxWxD)	4.5x2.9x1.6 in. (11.5x7.4x4.1 cm)	
	0.4 lbs (0.2 Kg)	
Other	Configuration/Diagnostic utilities	
	Capacity: 1000 points	
	Table,Wall or DIN rail mount	
Communication Interfaces	RS-485	2
	RS-232	-
	Ethernet 10Base-T, 100BASE-T[2]	1
	Mbus	-
	KNX	-
	LonWorks	-
Approvals	TUV Approved to UL 916 and CSA C22.2 standards	
	BTL and LonMark certified	
	LonMark Certified	
	RoHS Compliant	
	GOST-R Certified	
	CE and FCC	

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BACnet MS/TP Protocol Driver Description

Driver Name: BACnet/MSTP	Connection type:	RS-485 (Two wire, half-duplex)
	Baud Rates:	9600,19200,38400 and 76800[3]
	Data Bits:	7,8
	Stop Bits:	1,2
	Parity:	Odd, Even, None
	Multidrop Capability:	Yes
PG-102-100-AA AS A BACnet MS/TP CLIENT		
Read Operations Supported	**Properties Supported**	**Comments and Limitations**
Read Property	Present Value	Store value in Data Array location after scaling has been applied
	Out_Of_Service	When using a Complex Data Object, the OOS property is fully supported. Return FALSE when not OOS or when using standard Data Arrays
	Units	Returns Units as specified in the Map Descriptor
	Reliability	When using a Complex Data Objects, returns “Unreliable Other” when the Node is offline, or when the data is old. Returns FALSE if the Node is online or when using Standard Data Arrays
	Priority_Array	Returns Priority_Array of Map Descriptor
	Unsupported	This property is supported
	Protocol_Object_Type_Supported	This property is supported
	Protocol_Services_Supported	This property is supported
	Database_Revision	This property is supported and will change if a new configuration is downloaded to the FS
	Max_Master	This property is supported for

		the BACnet /MSTP DLL option
	Max_Info_Frames	This property is supported for the BACnet/MSTP DLL option
	Relinguish_Default	Returns Relinguish _Default
Read Property Multiple	As for Read Property	Transactions can be defined to read multiple objects and properties in a single ReadPropertyMultiple operation.
	ALL	Read Property Multiple of the ALL property is NOT supported
Write Operations Supported	**Properties Supported**	**Comments and Limitations**
Write Property Write Property Multiple	Present Value	Send value in Data Array location after scaling has been applied
PG-102-100-AA AS A BACnet MS/TP SERVER		
DEVICE OBJECT		
Read Operations Supported	**Properties Supported**	**Comments and Limitations**
Read Property	Object_Identifier	Returns Object _ID with Node_ID as Object Instance
	Object_Name	Returns Node Name
	Object_Type	Returns Device Object type
	System_Status	Returns Normal
	Vendor_Name	Returns PG-10XX Technologies
	Vendor_Identifier	Returns 37
	Model_Name	Returns PG-10XX model
	Firmware_revision	Returns Kernel Version
	Application_sw_version	Returns DCC version
	Protocol_Version	Returns version 1
	Protocol_Revision	Returns version 1
	Protocol_Services_Supported	This property is supported
	Protocol_Object_Type_Supported	This property is supported
	Protocol_Object_List	Returns a list of objects defined in the PG-10XX
	Max_APDU_Length_Accepted	For PG-10XX,the MAX APDU length for BACnet MSTP is 480 bytes and for BACnet IP/BACnet Eth 1497 bytes
	Segmentation_Supported	Returns Segmantation NOT

		Supported
	APDU_Timeout	Returns the value as defined by the Node's "Timeout" paramater
	APDU_Retries	Returns the value as defined by the Node's "Retries" parameter
	Device_Address_Bindings	Returns an empty list
	Max_Master	This property is supported for the BACnet/MSTP DLL option
	Max_info_Frames	This property is supported for the BACnet/MSTP DLL option
	Description	This property is supported
	Database_Revision	This property is supported and will change if a new configuration is downloaded to the PG-10XX
Read Property Multiple	Same properties as Read Property	Read Property Multiple is fully supported. Multiple objects with multiple properties can be specified
Write Operations Supported	**Properties Supported**	**Comments and Limitation**
Write Property	Max_Master	This Property is supported for the BACnet /MSTP DLL option
	Max_info_Frames	This Property is supported for the BACnet /MSTP DLL option
Write Property Multiple	Max_Master	This Property is supported for the BACnet /MSTP DLL option
	Max_info_Frames	This Property is supported for the BACnet /MSTP DLL option
Analog Input Object		
Read Operations Supported	**Properties Supported**	**Comments and Limitations**
Read Property	Object_Identifier	No Limitations
	Object_Name	Returns Map Descriptor Name
	Object_Type	Returns Analog Input Object Type
	Present_Value	Returns value in Data_Array after scaling has been applied
	Status_Flags	When using Complex Data Objects returns the FAULT and OUT_OF_SERVICE fields as

		indicated in section 12.2.7 of the BACnet specification. When using standard Data Arrays returns FALSE for all bits.
	Event_State	No Limitations
	Reliability	When using a Complex Data Objects, returns Unreliable Other when the Node is offline, or when the data is old. Returns FALSE if the node is online or when using Standard Data Arrays
	Out_Of_Service	Fully supported when using a Complex data Object. Returns FALSE when not OOS or when using standard Data Arrays
	Description	This property is supported
	Units	Returns Units as specified in the Map Descriptor
Read Property Multiple	Same properties as Read Property	Read Property Multiple is fully supported. Multiple objects with Multiple properties can be specified
Write Operations Supported	**Properties Supported**	**Comments and Limitations**
Write Property	Present_Value	Writing to the Present Value is allowed if the Object is OOS
Write Property Multiple		
Data Sharing Operations Supported	**Properties Supported**	**Comments and Limitations**
SubscribeCOV	Present_value	Subscription storage is non-volatile
COVNotification	Present_value	Confirmed and Unconfirmed
Alarm and Event Operations Supported	**Properties Supported**	**Comments and Limitations**
EventNotification	Present_Value,Status	Confirmed and Unconfirmed
AcknowledgeAlarm		No limitations
Analog Output Object, Analog Value Object		
Read Operations	**Properties Supported**	**Comments and Limitations**

Supported		
Read Property	Object_Identifier	No Limitations
	Object_Name	Returns “Map Descriptor Name”
	Object_Type	Returns Analog Output Object type
	Present_Value	Returns value in Data Array after scaling has been applied
	Status_Flags	When using Complex Data Objects returns the FAULT and OUT_OF_SERVICE fields as indicated in section 12.2.7 of the BACnet specification. When using standard Data Arrays returns FALSE for all bits
	Event_State	No Limitations
	Reliability	When using a Complex Data Objects, returns “Unreliable Other” when the Node is offline, or when the data is old. Returns FALSE if the Node is online or when using Standard Data Arrays
	Out_Of_Service	Fully supported when using a Complex Data Object. Returns FALSE when not OOS or when using standard Data Arrays
	Units	Returns Units as specified in the Map Descriptor
	Priority_Array	Returns Priority_Array of Map Descriptor
	Description	This property is supported
	Relinguish_Default	Returns Religuish _Default
Read Property Multiple	Same properties as Read Property	Read Property Multiple is fully supported. Multiple objects with multiple properties can be specified
Write Operations Supported	Properties Supported	Comments and Limitations
Write Property	Present_Value	When using Complex Data Objects and OOS is TRUE, then the write will not cause a write-through operation to the Server side. If the OOS is FALSE
Write Property Multiple		

		or when using standard Data Arrays then writes will always cause a write-through operation to the Server side
Data Sharing Operations Supported	**Properties Supported**	**Comments and Limitations**
SubscribeCOV	Present_Value	Subscription storage is non-volatile
COVNotification	Present_Value	Confirmed and Unconfirmed
Alarm and Event Operations Supported	**Properties Supported**	**Comments and Limitations**
Event Notification	Present_Value, Status	Confirmed and Unconfirmed
AcknowledgeAlarm		No Limitations
Binary Input Object		
Read Operations Supported	**Properties Supported**	**Comments and Limitations**
Read Property	Object_Identifier	No Limitations
	Object_Name	Returns “Map Descriptor Name”
	Object_Type	Returns Analog Input Object type
	Present_Value	Returns the binary value in the data array
	Status_Flags	When using Complex Data Objects returns the FAULT and OUT_OF_SERVICE fields as indicated in section 12.2.7 of the BACnet specification. When using standard Data Arrays returns FALSE for all bits
	Event_State	No Limitations
	Reliability	When using a Complex Data Objects, returns “Unreliable Other” when the Node is offline, or when the data is old. Returns FALSE if the Node is online or when using Standard Data Arrays
	Out_Of_Service	Fully supported when using Complex Data Object. Returns FALSE when not OOS or when using standard Data Arrays

	Polarity	Always returns “Normal”
	Active_Text	Returns Active Text as specified on the Map Descriptor
	Description	This property is supported
	Inactive_Text	Returns Inactive Text as specified on the Map Descriptor
Read Property Multiple	Same properties as Read Property	Read property Multiple is fully supported. Multiple objects with multiple properties can be specified
Write Operations Supported	**Properties Supported**	**Comments and Limitations**
Write Property	Present_Value	Writing to the Present Value is allowed if the Object is OOS
Write Property Multiple		
Data Sharing Operations Supported	**Properties Supported**	**Comments and Limitations**
SubscribeCOV	Present_Value	Subscription storage is non-volatile
COVNotification	Present_Value	Confirmed and Unconfirmed
Alarm and Event Operations Supported	**Properties Supported**	**Comments and Limitations**
Event Notification	Present_Value, Status	Confirmed and Unconfirmed
AcknowledgeAlarm		No Limitations
Binary Output Object, Binary Value Object		
Read Operations Supported	**Properties Supported**	**Comments and Limitations**
Read Property	Object_Identifier	No Limitations
	Object_Name	Returns “Map Descriptor Name”
	Object_Type	Returns Analog Input Object type
	Present_Value	Returns the binary value in the data array
	Status_Flags	When using Complex Data Objects returns the FAULT and

		OUT_OF_SERVICE fields as indicated in section 12.2.7 of the BACnet specification. When using standard Data Arrays returns FALSE for all bits
	Event_State	No Limitations
	Reliability	When using a Complex Data Objects, returns "Unreliable Other" when the Node is offline, or when the data is old. Returns FALSE if the Node is online or when using Standard Data Arrays
	Out_Of_Service	Fully supported when using Complex Data Object. Returns FALSE when not OOS or when using standard Data Arrays
	Priority_Array	Returns Priority_Array of Map Descriptor
	Religuish_Default	Returns Current Relinguish_Default
	Description	This property is supported
	Active_Text	Returns Active Text as specified on the Map Descriptor
	Inactive_Text	Returns Inactive Text as specified on the Map Descriptor
Read Property Multiple	Same properties as Read Property	Read property Multiple is fully supported. Multiple objects with multiple properties can be specified
Write Operations Supported	**Properties Supported**	**Comments and Limitations**
Write Property Write Property Multiple	Present_Value	When using Complex Data Objects and OOS is TRUE, then the write will not cause a write-through operation to the downstream side. If the OOS is FALSE or when using standard Data Arrays when writes will always cause a write-through operation to the downstream

		side
Data Sharing Operations Supported	**Properties Supported**	**Comments and Limitations**
SubscribeCOV	Present_Value	Subscription storage is non-volatile
COVNotification	Present_Value	Confirmed and Unconfirmed
Alarm and Event Operations Supported	**Properties Supported**	**Comments and Limitations**
Event Notification	Present_Value, Status	Confirmed and Unconfirmed
AcknowledgeAlarm		No Limitations
Multiple State Input Object		
Read Operations Supported	**Properties Supported**	**Comments and Limitations**
Read Property	Object_Identifier	No Limitations
	Object_Name	Returns “Map Descriptor Name”
	Object_Type	Returns Analog Input Object type
	Present_Value	Returns unsigned Integer value in the data array
	Status_Flags	When using Complex Data Objects returns the FAULT and OUT_OF_SERVICE fields as indicated in section 12.2.7 of the BACnet specification. When using standard Data Arrays returns FALSE for all bits
	Event_State	No Limitations
	Reliability	When using a Complex Data Objects, returns “Unreliable Other” when the Node is offline, or when the data is old. Returns FALSE if the Node is online or when using Standard Data Arrays
	Description	This property is supported
	Out_Of_Service	When using a Complex Data Object, the OOS property is fully supported. Returns FALSE when not OOS or when using standard Data Arrays
	Number_Of_State	When using a Complex Data

		Object, returns the number of states defined. When using Standard Data Arrays returns the value of 5
	State_Text	When using Complex Data Objects returns the State Text Strings defined. When using Standard Data Arrays return "State_X" where "X" is the value stored in Data_Array and could be 0 to 4
Read Property Multiple	Same properties as Read Property	Read property Multiple is fully supported. Multiple objects with multiple properties can be specified
Write Operations Supported	**Properties Supported**	**Comments and Limitations**
Write Property Write Property Multiple	Present_Value	Writing to the Present Value is allowed if the Object is OOS
Data Sharing Operations Supported	**Properties Supported**	**Comments and Limitations**
SubscribeCOV	Present_Value	Subscription storage is non-volatile
COVNotification	Present_Value	Confirmed and Unconfirmed
Alarm and Event Operations Supported	**Properties Supported**	**Comments and Limitations**
Event Notification	Present_Value, Status	Confirmed and Unconfirmed
AcknowledgeAlarm		No Limitations
Multi-State Output Object, Multi-State Value Object		
Read Operations Supported	**Properties Supported**	**Comments and Limitations**
Read Property	Object_Identifier	No Limitations
	Object_Name	Returns "Map Descriptor Name"
	Object_Type	Returns Analog Input Object type
	Present_Value	Returns unsigned Integer value in the data array
	Status_Flags	When using Complex Data Objects returns the FAULT and

		OUT_OF_SERVICE fields as indicated in section 12.2.7 of the BACnet specification. When using standard Data Arrays returns FALSE for all bits
	Event_State	No Limitations
	Reliability	When using a Complex Data Objects, returns “Unreliable Other” when the Node is offline, or when the data is old. Returns FALSE if the Node is online or when using Standard Data Arrays
	Out_Of_Service	Fully supported when using a Complex Data Object. Returns FALSE when not OOS or when using standard Data Arrays
	Number_Of_State	When using a Complex Data Object, returns the number of states defined. When using Standard Data Arrays returns the value of 5
	State_Text	When using Complex Data Objects returns the State Text Strings defined. When using Standard Data Arrays return “State_X” where “X” is the value stored in Data_Array and could be 0 to 4
	Description	This property is supported
	Priority_Array	Returns Priority_Array of Map Descriptor
	Religuish_Default	Returns Relinguish_Default
Read Property Multiple	Same properties as Read Property	Read property Multiple is fully supported. Multiple objects with multiple properties can be specified
Write Operations Supported	**Properties Supported**	**Comments and Limitations**
Write Property Write Property Multiple	Present_Value	When using Complex Data Objects and OOS is FALSE or when using standard data arrays, writes will trigger a write through operation to

		client side
Data Sharing Operations Supported	**Properties Supported**	**Comments and Limitations**
SubscribeCOV	Present_Value	Subscription storage is non-volatile
COVNotification	Present_Value	Confirmed and Unconfirmed
Alarm and Event Operations Supported	**Properties Supported**	**Comments and Limitations**
Event Notification	Present_Value, Status	Confirmed and Unconfirmed
AcknowledgeAlarm		No Limitations
Notification Class Object		
Read Operations Supported	**Properties Supported**	**Comments and Limitations**
Read Property	Object_Identifier	No Limitations
	Object_Name	Returns “Map Descriptor Name”
	Object_Type	Returns Notification Class Object type
	Description	No Limitations
	Notification_Class	No Limitations
	Priority	No Limitations
	Ack_Required	No Limitations
	Description	This Property is supported
	Recipient List	No Limitations
Read Property Multiple	Same properties as Read Property	Read property Multiple is fully supported. Multiple objects with multiple properties can be specified
Write Operations Supported	**Properties Supported**	**Comments and Limitations**
Write Property	Recipient_List	RecipientList storage is non-volatile
Write Property Multiple		
AddList	RecipientList	Used to subscribe to Alarm and Event Notifications
Unsupported Functions And Data Types		
BACnet Object Type not Supported		
Averaging Object		
Calendar Object		

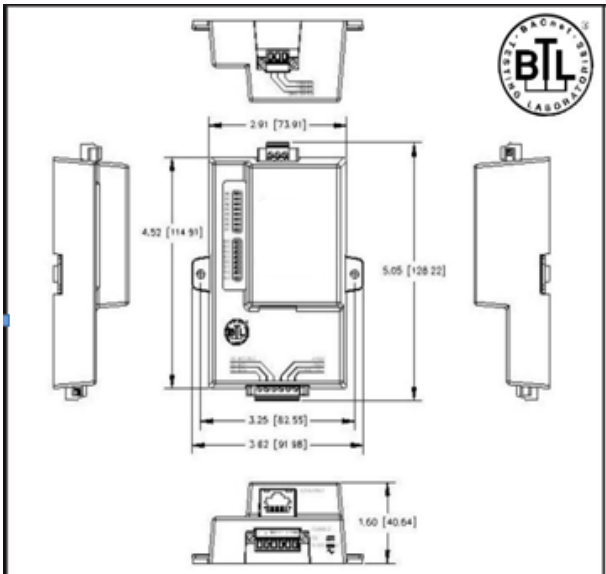
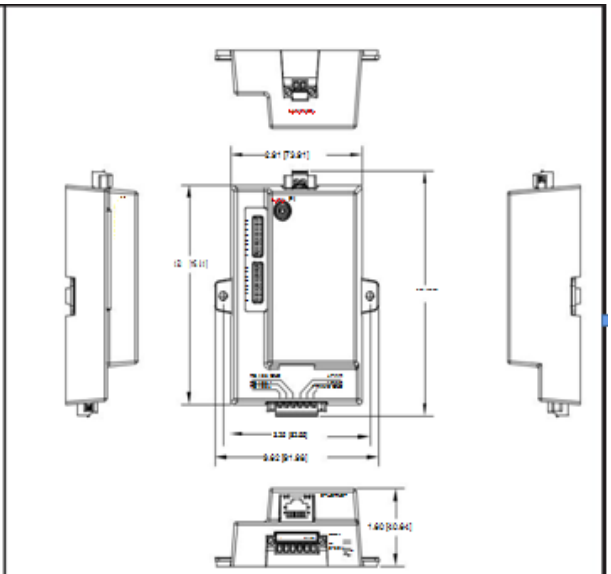
Command Object
Event Enrollment Object
File Object
Group Object
Life Safety Point Object
Life Safety Zone Object
Loop Object
Notification Class Object unsupported on Client side only
Program Object
Schedule Object
BACnet Services not Supported
Alarm and Event Services unsupported on Client side only
File Access Services
Virtual Terminal Services
COV and EventNotification services are not supported for BACnet
MSTP on the ProtoCessor
For BACnet MSTP , PTP and Arcnet , COV services are disabled by default and may be enabled by setting the Node_Option property to COV_Enable in the Nodes section configuration file.

Modbus RTU

Modbus RTU Protocol Driver Description

PG-102-100-AA Mode	**Comments**
Client	Nodes:1 Only 1 client node allowed on Multidrop systems
Server	Nodes:255 Actual electrical loading may reduce number of usable server nodes
Formal Driver Type	Serial
	Client or Server
Connection Information	Connection Type: RS-232 or RS-485(Two wire, half-duplex)
	Baud Rate: 110-115200, standard baud rates only
	Data Bits: 7,8
	Parity: Even, odd, None
	Multidrop Compatibility: Yes
Function Code Supported	
Function Codes	**Description**
01	Read Discrete Output Status (0xxxx)
02	Read Discrete Input Status (1xxxx)
03	Read Output Registers (4xxxx)

04	Read Input Registers (3xxxx)
05	Force Single Coil (0xxxx)
06	Preset Single Register (4xxxx)
15	Force Multiple Coils (0xxxx)
16	Preset Multiple Registers (4xxxx)

	
NON AC DIMENSIONS	**AC DIMENSIONS**

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