Accessing BACnet Objects as Any Modbus Register You Like

All types of BACnet objects in a BB2-7010 are accessed as Modbus holding registers when the gateway is a Modbus slave. The holding register numbers are documented in the user guide in section 8.2 for Modbus RTU or section 9.2 for Modbus TCP (register mapping is same for both RTU and TCP). However, you do have the option of assigning any Modbus register number you like and any Modbus register type you like to any BACnet object by using the Server Map.

We will look at three different ways to look at Binary Outputs in the following examples, but the same principle applies to all other object types. By default, without using the server map, Binary Outputs will show up at holding registers 4001, 4002, etc., as illustrated below.

100110011011 10011Babel 101101Babel 10010Network 100010Network 1000001	Butter 2 AODBUS GATEWAY 7010-01			Contro	ol-Solu	FIONS, IN Minneso	NC. DTA
Data Objects	Modbus	BACnet	ľ	System Se	tup		
Analog	Binary	Muiti	i-State				
Input Objects	Output Objects	Value Objects	ľ		ľ		
This page displays data a	s presently found in th	ne local registers main	itained by t	his device.			
Binary Output Objects		Showing objects fro	om 1			pdate < P	rev Next >
Object Object Name Object Description	Out Sen	t of Present Value	Reliability	Status	Text		
1 My Binary Output Description of BO	1 1	N Active	0	0,0,0,0	BO 1 Active		
2 My Binary Output Description of BI 2	2	N Inactive	0	0,0,0,0	BI 2 Inactive		
3 My Binary Output Description of BI 3	3	N Inactive	0	0,0,0,0	BI 3 Inactive		
ModScan32 - ModSca1 File Connection Setup V File Connection Setup V File Connection Setup V ModScal Address: 4001 Length: 3	View Window Help	1 INU Int Type GISTER	mber of P lid Slave	olls: 10 Responses Reset	: 10 Ctrs		
44001: <00001> 44002: <00000> 44003: <00000>				Polls: 10	Resps: 10	nge. Cl he Dev at valu alue wi	ick Prev/Next rice Link. The Je. The ill be written to

Now let's say we want to read the Binary Outputs as Modbus coils. To do that, we start by going to the Server Map. This page is found under Modbus TCP settings, but applies to Modbus RTU as well. To enable mapping using Modicon register numbering (required in order to access objects as coils), check both of the boxes illustrated at the bottom of this page. Then simply enter the Modicon address and assign the BACnet objects as illustrated below.

10011001101101 10011 Bachel Buster 2 Bachet-Modbus 1001 Network Gateway Model BB2-7010-01 MINNESOTA												
Data Objects Modbus BACnet System Setup												
	Modt	ous RTU Data 👔	Modb	is RTU Set	up Mo	dbus TCP D	ata	Mod	bus TCP S	etup		
De	vices	Client F	Read Ma	p	Client Write Map Server Map							
Crei also mat	Create remote client's custom view of local registers. This page sets up the register map for the virtual Modbus/TCP server. This map is also referred to as the "user map". This allows you to remap the default server register map to match any layout you wish, including matching the map found in other equipment.											
Map	Mapped	Mapped Registe	r i	Local	Scale Factor	Offset	в	it Field	Fill	,	Name	
1	1	Unsigned Integer	▼ B	0 1	0.000000	0.000000) 0	000	0000	м	y Binary Out	put 1
2	2	Unsigned Integer	• B	0 2	0.000000	0.000000) 0	000	0000	м	y Binary Out	put 2
з	3	Unsigned Integer	• B	03	0.000000	0.000000) 0	000	0000	м	y Binary Out	put 3
4	0	None	• 0		0.000000	0.000000) 0	000	0000		-222	
# Cu	# Custom Registers Enabled: 4 User Map Enabled Map is Exclusive Swap Double Registers Zero fill null registers Insert Delete Use Modicon mapping											

We are now reading the same Binary Output objects as Modbus coils, as illustrated below.

1001 Babel Buster BACNET-MODBUS 1001 NETWORK GATEWAY MODEL BB2-7010-01	2			Contre	ol Soli	UTIONS MIN	5, Inc. nesota	
Data Objects Modbus		BACnet		System Se	etup			
Analog I	Binary	Mult	ti-State					
Input Objects Output O	bjects 🔰	Value Object:	s V		ľ			
This page displays data as presently f	ound in the loc	al registers main	ntained by tl	nis device.				
			_		-		r	
Binary Output Objects	Sł	nowing objects fr	om 1			Update	< Prev	Next >
Object Name Object Description	Out of Service	Present Value	Reliability	Status	Text			
1 My Binary Output 1 Description of BO 1	N	Active	0	0,0,0,0	BO 1 Active			
2 My Binary Output 2 Description of BI 2	N	Inactive	0	0,0,0,0	BI 2 Inactive			
My Binary Output 3 Bescription of BI 3	N	Inactive	0	0,0,0,0	BI 3 Inactive			
ModScan32 - ModSca1						X	<u> </u>	
File Connection Setup View Windo	w Help ⊒lølvol							
	3 8 5							
ModSca1		1						
Address: 0001 MOE	Ce Ia: BUS Point T	ype Va	umber of Po lid Slave F	olls: 14 Resnonses	: 14			
Length: 3 01: COIL	STATUS	•		Reset	Ctrs	-		
							ge. Click Prev	/Next
00001: <1>							ie Device Link	. The
00002: <0> 00003: <0>								
							at value. The alue will be wri	itten to
For Help, press F1				Polls: 14	Resps:	14	0	

If we wanted to read the Binary Outputs as Modbus status inputs (discrete inputs) instead, we would enter the Modicon register numbers for status inputs instead, as illustrated below.

1001100110110110110110110110011001000000										
Da	Data Objects Modbus BACnet System Setup									
	Modi	us RTU Data	Modbus RTU S	etup Mod	bus TCP Dat	a Mod	bus TCP S	Setup		
De	vices	Client Re	ad Map	Client Write I	Map)	Server Map	٦	\int		ן
Crea also mat	Create remote client's custom view of local registers. This page sets up the register map for the virtual Modbus/TCP server. This map is also referred to as the "user map". This allows you to remap the default server register map to match any layout you wish, including matching the map found in other equipment. Showing 1 to 4 of 4 Update < Prev Next >									
Map #	Mapped Register #	Mapped Register Format	Local Object #	Scale Factor	Offset	Bit Field	Fill		Name	1
1	10001	Unsigned Integer 🔻	BO 1	0.000000	0.000000	0000	0000	Μ	ly Binary Out	put 1
2	10002	Unsigned Integer 🔻	BO 2	0.000000	0.000000	0000	0000	N	ly Binary Out	put 2
3	10003	Unsigned Integer 🔻	BO 3	0.000000	0.000000	0000	0000	N	ly Binary Out	put 3
4	0	None -	0	0.000000	0.000000	0000	0000			
# Cu	stom Regist	ers Enabled: 4	Vse Swa Vse	er Map Enabled ap Double Regis e Modicon mapp	Map is ters Zero f	Exclusive Fill null registe	rs	I	nsert Dele	ete

Although potentially not useful since you cannot write to a Modbus status input, we illustrate reading the same Binary Outputs as status inputs below.

110011011011011011011011011011011011011									
Data Objects	Modbus	BACnet		System Set	tup				
Analog	Binary	Mult	i-State						
∫ Input Objects	Output Objects	Value Objects	, Y		ľ				
This page displays data as p	presently found in the k	ocal registers mair	ntained by th	nis device.					
Binary Output Objects		Showing objects fro	om 1		Update	<pre></pre>			
Object Object Name Object Description	Out of Service	Present Value	Reliability	Status	Text				
1 Description of BO 1	N	Active	0	0,0,0,0	BO 1 Active				
2 Description of BI 2	N	Inactive	0	0,0,0,0	BI 2 Inactive				
Bescription of BI 3	N	Inactive	0	0,0,0,0	BI 3 Inactive	~			
ModScan32 - ModSca1 File Connection Setup Vie File Connection Setup Vie ModSca1 Address: 0001 Length: 3	Window Help	Type Va	mber of Pc lid Slave F	olls: 5 Responses: Reset	5 Ctrs	ge. Click Prev/Next			
10001: <1> 10002: <0> 10003: <0> For Help, press F1				Polls: 5	Resps: 5	ne Device Link. The at value. The alue will be written to			
						when this			

You can mix any number of Modbus register types and register numbers using Modicon notation, and can assign the Modbus registers to any of the BACnet objects in the gateway. Be sure to read the Quick Help section at the bottom of the Server Map page for more information about setting up the various parameters for each Server Map entry.

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