# How to configure Yabe and test for EKI-1242BNMS

v1.0

2018/05/08

# **1** Induction

### **1.1 Overview**

Advantech EKI-1242BNMS is a protocol gateway that provides users with the following software features:

- Gateway function to transfer data between Modbus TCP/RTU and BACnet
- I/O mapped command status
- WEB-based GUI for I/O data visualization
- Effortless configuration via WEB
- Dual image
- Easy backup & restore configuration via microSD card

Note. Device WEB page can be accessed only via Modbus TCP Ethernet port.

### **1.2 Environment**



- PC 1: Installed Yabe
  - IP Address: 192.168.0.5
- PC 2: Installed modsim for MODBUS Slave
  - IP Address: 192.168.1.15

- EKI-1242BNMS:
  - BACnet Interface IP Address: 192.168.0.1
  - MODBUS TCP Interface IP Address: 192.168.1.1

### 2 Modbus TCP Setting

For the testing, add two transactions as below.

- Transaction 1:
  - Name: "Read 1"
  - Mode: TCP
  - Slave IP Address: 192.168.1.15
  - Port: 502
  - Slave ID: 1
  - Function Code: 04- Read input registers
  - Poll Interval: 1000
  - Data Swap: None
  - Read Starting Address: 100
  - Read Quantity: 2
  - Response Timeout: 1000
- Transaction 2:
  - Name: "Write 1"
  - Mode: TCP
  - Slave IP Address: 192.168.1.15
  - Port: 502
  - Slave ID: 1
  - Function Code: 16- Write multiple registers
  - Trigger: Cyclic
  - Poll Interval: 1000
  - Data Swap: None
  - Write Starting Address: 110
  - Write Quantity: 2
  - Response Timeout: 1000

To access this page, click Protocol Setting > Modbus Setting

Modit	bus Settir	g								1
Start-up Mode     Running       When Modbus error     Freeze Data       Submit										
Modbus Commands Allocated input size: 4 bytes Al objects:2 AO objects:0 BO objects:0 Add Edit Delete Copy										
Index	Name	Mode	Slave ID	FC	Address/Quantity	Trigger	Scan Interval	Data Swap	32-bit	Response Timeout
O 1	Read 1	TCP Slave IP Address: 192.168.1.15 Port: 502	1	4	Read Address 100, Quantity 2	Cyclic	1000	None	Disabled	1000
O 2	Write 1	TCP Slave IP Address: 192.168.1.15 Port: 502	1	16	Write Address 110, Quantity 2	Cyclic	1000	None	Disabled	1000

Note: The gateway needs to be restarted before any changes will take effect.

# **3 Setup MODBUS Slave**

### 3.1ModSim32

ModSim32 is a very simple but powerful application for simulating data from MODBUS slave devices. We use the application to simulate a MODBUS Slave device for this testing.

Step1: Execute ModSim32.exe

Step2: New a MODBUS slave device in File  $\rightarrow$  New.

Step3: Configure setting as below

- Device Id: 1
- Address: 0100

• Length: 2

• Modbus Point Type: 04: INPUT REGISTER

ModSim1	
Device Id:     1       Address:     0100     MODBUS Point Type       Length:     2     04: INPUT REGISTER	
30100: <00000> 30101: <00000>	

Step4: Start MODBUS Slave in Connection→Connect→Modbus/TCP Svr. And

select Modbus/TCP Service Port to 502.

Vindow Help	
Device Id: 1 MODBUS Point Type I4: INPUT REGISTER	
**	
Select Service Port       Modbus/TCP Service Port       502       OK	
	MODBUS Point Type  I4: INPUT REGISTER  **  Select Service Port  Solution  So

Step5: Configure EKI-1242BNMS Modbus settings, please reference to

#### EKI-1242BNMS Quick Guide. Here will be created 2 transactions for this testing.

🌣 Modb	ous Comr	nands								
Allocate Al objec	ed input cts:2 A0	size: 4 bytes output siz 0 objects:2 BI objects:0	ze: 4 bytes BO objects	:0						
			,						Add Ed	it Delete Cop
Index	Name	Mode	Slave ID	FC	Address/Quantity	Trigger	Scan Interval	Data Swap	32-bit	Response Timeout
<b>O</b> 1	Read 1	TCP Slave IP Address: 192.168.1.15 Port: 502	1	4	Read Address 100, Quantity 2	Cyclic	1000	None	Disabled	1000
<b>O</b> 2	Write 1	TCP Slave IP Address: 192.168.1.15 Port: 502	1	16	Write Address 110, Quantity 2	Cyclic	1000	None	Disabled	1000

#### To access this page, click Protocol Setting > Mapping Overview

BACnet Object Mapping - A	l			^	
Object identifier	Device name	Address	Object name		
AI1	Read 1	100	ANALOG INPUT 1		
AI2	Read 1	100	ANALOG INPUT 2		
BACnet Object Mapping - A	0			^	
Object identifier	Device name	Address	Object name		
A01	Write 1	110	ANALOG OUTPUT 1		
AO2	Write 1 110 ANALOG OUTPUT 2				

## **4 Yet Another BACnet Explorer**

# (Yabe) Setting

### 4.1 Add device

Click "Right button" on Devices icon to Add device

×								
es		Subscriptio	ns, Periodic Po	olling, Events	/Alarms			
<ul> <li>Add device</li> <li>Remove device</li> <li>Send WhoIs</li> <li>Export device DB</li> <li>Time synchronize</li> <li>Device control</li> <li>Alarm Summary</li> <li>Get Properties name</li> <li>Create Object</li> </ul>	F2 Ctrl+T Ctrl+D Ctrl+A Ctrl+N Ctrl+N	Device	ObjectId	Name	Value	Time	Status	
ess Space								

### 4.2 Add BACnet IP device

In the BACnet/IP over Udp options and click "Add" button

General Retries 3	Timeout 1000	
-BACnet/IP over U Port Local endpoint	ldp BAC0 💭 192.168.0.5	Add
-BACnet/MSTP ov	er serial	
Port	СОМЗ 👻	
Baud	115200	
Source Address	10	
Max Master	127 🌲	
Max Frames	1	Add
BACnet/PTP over	serial	
Port	СОМЗ 👻	
Baud	115200	
Password		Add
BACnet/Ethernet		
Interface		Add
		-

Find Device 150001 on 192.168.0.1:47808 and click ANALOG INPUT 1

to check Properties about Present Value

File Functions Options Help									
0 X									
avices	Subscripti	nns, Periodic Po	illing, Ever	ts/Alarms			Properties		
Devices									
🗄 👬 Udp:47808	Device	ObjectId	Name	Value	Time	Status	4 BacnetProperty		
							Acked Transitions	111	
							Cov Increment	1	
							Deadband	0	
							Event Enable	000	
							Event State	0 : Normal	
							Event Time Stamps	Object[] 陣列	
							High Limit	0	
							Limit Enable	00	
							Low Limit	0	
							Notification Class	4194303	
							Notify Type	0 : Alarm	
dress Space							<ul> <li>Object Identifier</li> </ul>	OBJECT_ANALOG_INPUT:1	
DEVICE: DOUD	<u>^</u>						Object Name	ANALOG INPUT 1	
- S ANALOG INFULU							Object Type	0 : Object Analog Input	
ANALOG INPUT 2							Out Of Service	False	
ANALOG INPUT 3							Present Value	1	
- 🔯 ANALOG_INPUT:4							Status Flags	0000	
ANALOG_INPUT:5							Time Delay	0	
ANALOG_INPUT.6							Units	95 : No Units	
ANALOG_INPUT:7									
- ANALOG INPUTS									
ANALOG INPUT:10									
ANALOG_INPUT:11									
- 🖄 ANALOG_INPUT:12									
ANALOG INPUT 13							Acked Transitions		
KANALOG_INPUT:14							BACNET_APPLICATION_TAG_BIT_ST	RING	
ANALOG_INPUT:15									

### 4.3 Add BACnet MSTP device

To access this page, click Protocol Setting > BACnet Setting

Change Mode to MSTP

BACnet Setting		-	•
Device Status/Control Word in Al[0]/AO[0]	O Enabled O Disabled		
BACnet Device Name	ADV_bacserv		
Device Identifier	150001	(0-4194302)	
Mode	MSTP •		
Max. Masters	127	(0-127)	
Max Info Frames	1	(1-65535)	
MAC. Address	1	(0-127)	
	Submit		

AD\ANTECH	EKI-1242BNMS Fieldbus Gateway	
Overview		
↔ Serial Setting	BACnet RS485 Port	^
Port 1 (BACnet)	Baud Rate 115200 T	
Port 2 (Modbus)	Submit	
Protocol Setting		
☑ System Management		
🗲 Tools		

And then access this page, click Serial Setting > Port 1 (BACnet)

Yabe Setting in the BACnet/MSTP over serial options and click "Add" button Please check Baud rate is same with device Port 1 (BACnet)

Retries 3	Timeout 1000	▲ ▼
BACnet/IP over U	ſdp	
Port	BACO 🊔	Add
Local endpoint	192.168.0.5	•
BACnet/MSTP ov	er serial	
Port	СОМЗ 👻	
Baud	115200	
Source Address	10	
Max Master	127 🚔	
Max Frames	1	Add
BACnet/PTP over	serial	
Port	СОМЗ 👻	
Baud	115200	
Password		Add
BACnet/Ethernet		
Interface		Add

Find Device 150001 on COM12 and click ANALOG INPUT 1 to check Properties about Present Value

🔍 Yet Another Bacnet Explorer - Yabe			**
File Functions Options Help			
O X			
Devices		Properties	
Devices	Subscriptions, Feriodic Folling, E		
E → COM12	Device ObjectId Name		
		a BacnetProperty	
• free94		Acked Transitions	111
- • free95		Cov Increment	1
• free96		Deadband	0
• free97		Event Enable	000
• free98		Event State	0 : Normal
• free99		Event Time Stamps	Object[] 陣列
• free100		High Limit	0
····· • freelUl		Limit Enable	00
······································		Low Limit	0
- Ama104		Notification Class	4194303
neero4		Notify Type	0 : Alarm
e free105		Object Identifier	OPECT ANALOG INDUT-1
- fme107		Object Neme	ANALOG INPUT 1
• free108		Object Name	ANALOG INFOTT
433	]	Object Type	0. Object Analog Input
Address space	1	Out of Service	Palse
A ANALOG INDUTO		Present Value	1
RANALOG INFILT 1		Status Plags	0000
ANALOG INPUT 2		Time Delay	0
ANALOG INPIT-3		Units	95 : No Units
ANALOG INPUT:4			
ANALOG INPUT-5			
ANALOG_INPUT:6		Askad Transitions	
ANALOG_INPUT:7		DACKET ADDICATION TAC DIT STDING	
ANALOG_INPUT:8	4	DUCHET_ULLICATION_TRO_DIT_01KING	
ANALOG_INPUT9			

NOTE: To access Protocol Setting > BACnet Setting and select Mode for EKI-1242BNMS support BACnet IP or BACnet MSTP