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Version 4.5 -
April 14, 2021 10:44 AM

MCS-BMS-GATEWAY STARTUP GUIDE

Covers Model No. FPC-ED4



File No: 916 CE & RoHS

**MCS Total
Solution
for all your
Control
Needs**

*For Interfacing MCS-MAGNUM to:
Building Automation Systems Protocols
BACnet MS/TP, Metasys N2 Open, LonWorks,
Modbus IP to RTU*

Revision/Disclaimer Page

Date	Author	Description of Changes
11-06-09-15	DEW	Restructured manual
07-05-16	DEW	New files from SMC
07-06-16	DEW	Edits from Carlos
10-03-16	DEW	Change Drawings from Ian - pg 13
12-27-16	DEW	Add new chapter 9
11-30-17	DEW	Remove Address 0 on dip switch settings
11-19-29	DEW	Add new Modbus IP to RTU
1-29-2020	DEW	pg 11 Change Baud rate for Metasys N2 to 9600
04-08-2021	DEW	Change reference to default node_offset Value
04-09-2021	DEW	Change section on programming use app 085
04-12-2041	DEW	Changes from Flint

The MCS Commitment is to provide practical solutions for the industries needs and to be both a leader and partner in the effective use of microprocessor controls.

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Chapter - 1. Introduction

MCS-BMS-GATEWAY is an external, high performance Building Automation multi-protocol gateway that has been pre programmed to support BACnet®1 MS/TP, Metasys®2 N2 by JCI, LonWorks®3 and Modbus IP to RTU. Configurations for the various protocols are stored within the MCS-BMS-GATEWAY and are selectable via DIP switches for fast and easy installation. It is not necessary to download any configuration files to support the required applications.

This document provides the necessary information to facilitate installation of the MCS-BMS-GATEWAY.

1.1. BTL Mark – BACnet Testing Laboratory



The BTL Mark on the MCS-BMS-GATEWAY is a symbol that indicates to a consumer that a product has passed a series of rigorous tests conducted by an independent laboratory which verifies that the product correctly implements the BACnet features claimed in the listing. The mark is a symbol of a high-quality BACnet product. Go to <http://www.bacnetinternational.net/btl/> for more information about the BACnet Testing Laboratory.

1.2. LonMark Certification



LonMark International has developed extensive product certification standards and tests to provide the integrator and user with confidence that products from multiple manufacturers utilizing LonMark devices work together. Micro Control Systems has more LonMark Certified gateways than any other gateway manufacturer, including the ProtoCessor, MCS-BMS-GATEWAY and MCS-BMS-GATEWAY for OEM applications and the full featured, configurable gateways.

1.3. UL and RoHS Certification



File No: 916 CE & RoHS

The MCS-BMS GATEWAY is approved across a variety of standards, including the UL 916, CE, and RoHS.



¹ BACnet is a registered trademark of ASHRAE

² Metasys is a registered trademark of Johnson Controls Inc.

³ LonMark is a registered trademark of LonMark International

⁴ LonWorks is a registered trademark of Echelon Corporation

Chapter - 2. Quick Start Guide

1. Record the information about the unit. (Section 3.1)
2. Set the device's BACnet MSTP serial settings (protocol address, baud rate) (Section 3.2)
3. Select a stored configuration and set field protocol MAC address/Node-ID/Device Instance, and baud rate. (Section 3.3)
4. Connect MCS-BMS-GATEWAY's 6 pin RS-485 connector to the RS-485 network that is connected to each of the devices. (Section 4.2)
5. Connect MCS-BMS-GATEWAY FPC-ED4's 2 pin LonWorks port to the Field Protocol cabling **if connecting by LonWorks** (Section 4.7)
6. Connect Power to MCS-BMS-GATEWAY's 6 pin connector. (Section 4.8)
7. Use the MCS-BMS-GATEWAY's embedded tool which is accessed with a browser, referred to in this manual as the Web Configurator, to change the IP Address. No changes to the configuration file are necessary.
8. LonWorks (FPC-ED4): If LonWorks is selected the MCS-BMS-GATEWAY must be commissioned on the LonWorks Network. This needs to be done by the LonWorks administrator using a LonWorks Commissioning tool.

Part Number	FPC-ED4
Serial No.....	
PROTOCOL USED	BACnet MS/TP, LONTALK, N2, Modbus IP to RTU
I/P ADDRESS MCS-BMS-GATEWAY.....	192-168-18-XXX(range 201-250)
IP ADDRESS MCS-CONTROLLER	192-168-18-XXX (see label on MCS-BMS-GATEWAY)
SUBNET ADDRESS.....	255-255-255-0
MAGNUM BACnet PORT.....	47808
BAUD RATE	19,200 Default
BACNET ADDRESS USED.....	181,XX (18100 plus Node setting 'A' Bank DIP Switches)

TERMS USED:

BACnet - communications protocol for **BUILDING AUTOMATION AND CONTROL NETWORKS**

MAC ADDRESS - **MEDIA ACCESS CONTROL ADDRESS** (MAC address)

LonWorks - **PROTOCOL FOR NETWORKING DEVICES**

BACnet MSTP - **COMMUNICATION PROTOCOL FOR BUILDING AUTOMATION TRANSPORTED BY ETHERNET**

Metasys® N2 - **COMMUNICATION PROTOCOL FOR BUILDING AUTOMATION WITH JOHNSON CONTROLS**

Chapter - 3. Setup for MCS-BMS-GATEWAY

3.1. Record Identification Data

Each MCS-BMS-GATEWAY has a unique part number located on the side or the back of the unit. This number should be recorded, as it may be required for technical support. The numbers are as follows:

Model	Part Number
MCS-BMS-GATEWAY FPC-ED4	FPC-ED4

Figure 1: MCS-BMS-GATEWAY Part Numbers

- FPC-ED4 units have the following 3 ports: LonWorks + Ethernet + RS-485.

3.2. Configuring Device Communications

3.2.1 Set COM settings on all Devices Connected to the MCS-BMS-GATEWAY

- Set up all devices on the same subnet as the MCS-BMS-GATEWAY and the configuration PC.
- All of the connected serial devices MUST have the same Baud Rate, Data Bits, Stop Bits, and Parity settings as the MCS-BMS-GATEWAY.
-

3.2.2 Set IP Address for each MCS-MAGNUM connected to the MCS-BMS-GATEWAY

The device needs to be on the same IP subnet as the MCS-BMS-GATEWAY and the configuration PC.

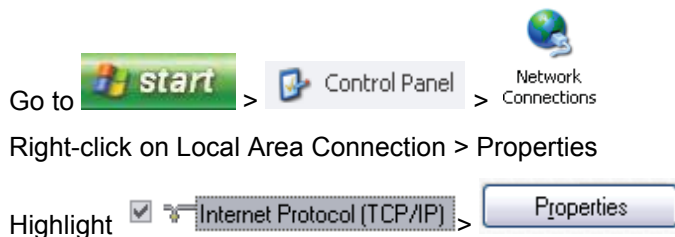
Record the following MCS-MAGNUM information to start the setup:

IP Address

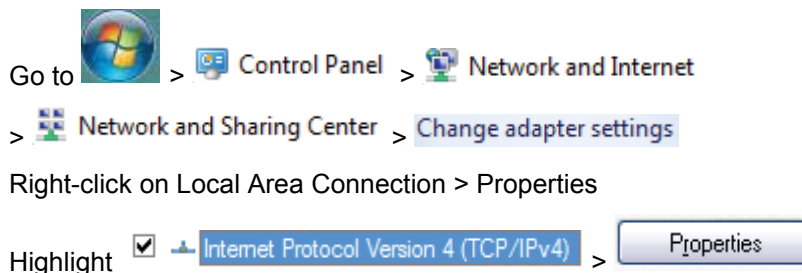
MCS-MAGNUM BacNet Device ID

Set MCS-MAGNUM BacNet port to **47808** in **MCS-CONFIG**

- For Windows XP:



- For Windows 7 or later:



- For Windows XP and Windows 7, select: Use the following IP Address

☒ Use the following IP address:

IP address: 192 . 168 . 18 . 201

Subnet mask: 255 . 255 . 255 . 0

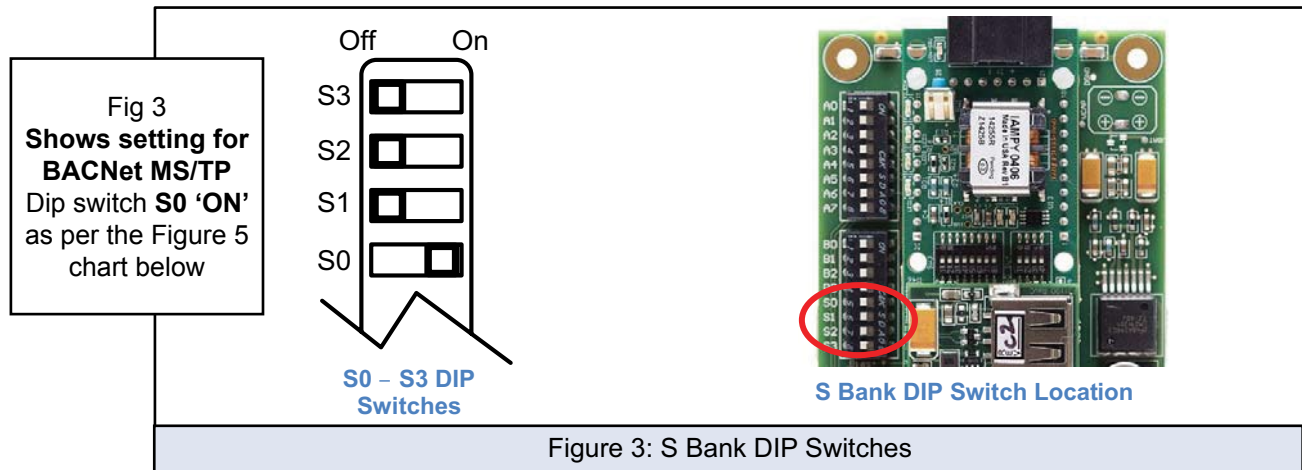
Default gateway: 192 . 168 . 18 . 1

- Click twice

3.3. BMS Network Settings:

- Selecting Stored Configurations, Setting the MAC Address, Device Instance, and Baud Rate
- Selecting Configuration Files for Devices: “S” Bank DIP Switches S0 – S3

The S bank of DIP switches (S0 - S3) are used to select and load a configuration file from a group of pretested/preloaded configuration files which are stored in the MCS-BMS-GATEWAY FPC-ED4.



NOTE: S0 - S3 DIP Switches sets the Protocol: BACnet MS/TP, LONTALK, OR JOHNSON N2



NOTE: When setting DIP Switches, please ensure that power to the board is OFF.

3.3.1 LonWorks, BACnet MS/TP, N2 and Modbus IP to RTU

The following chart describes S0 - S3 DIP Switch configuration settings for MCS-BMS-GATEWAY to support LonWorks, BACnet® MS/TP, Metasys® N2 by JCI and Modbus IP to RTU.

MCS-BMS-GATEWAY	MCS-BMS-GATEWAY Bank DIP Switches			
Profile – MCS-BMS-GATEWAY RER	S0	S1	S2	S3
Lonworks	Off	Off	Off	Off
Bacnet MS/TP	On	Off	Off	Off
N2	Off	On	Off	Off
Modbus IP to RTU	On	On	Off	Off

Figure 5 Protocol Selection Switch Tables

3.3.2 BACnet MS/TP: Setting the MAC Address for BMS Network

Only 1 MAC address is set for MCS-BMS-GATEWAY regardless of how many devices are connected to MCS-BMS-GATEWAY.

Set the BACnet MS/TP MAC addresses of the MCS-BMS-GATEWAY to a value between 1 to 127 (MAC Master Addresses); this is so that the BMS Front End can find the MCS-BMS-GATEWAY via BACnet auto discovery.

NOTE: Never set a BACnet MS/TP MAC Address from 128 to 255. Addresses from 128 to 255 are Slave Addresses and can not be discovered by BMS Front Ends that support auto discovery of BACnet MS/TP devices.

Set DIP switches A0 – A7 to assign MAC Address for BACnet MS/TP for the MCS-BMS-GATEWAY FPC-ED4. Please refer to Appendix A.1 for the complete range of MAC Addresses and DIP switch settings.



NOTE: When using Metasys N2 and Modbus TCP/IP, the 'A' Bank of DIP switches are disabled and not used. They should be set to OFF.

NOTE: When setting DIP Switches, please ensure that power to the board is OFF.

3.3.3 BACnet MS/TP and BACnet/IP: Setting the Device Instance

- The 'A' Bank of DIP switches are used for two purposes:
 - For BACnet MS/TP, they are used to set the BACnet MS/TP MAC address (Section 3.3.2)
 - For both BACnet MS/TP and BACnet/IP, they are also used to determine the BACnet Device Instance values
- The BACnet Device Instance can range from 1 to 4,194,303.
- The BACnet device instances will be calculated by taking the Node Offset (default is 18100) found in Web Configurator and adding it to the value of the 'A' Bank DIP switches.

When more than one device is connected to the MCS-BMS-GATEWAY, the subsequent BACnet Device Instance values will be sequential from the first/previous device.

For example:

- Given that Device Instance = Node_Offset + A Bank DIP switch value = Default Node_Offset value = 18150 = 'A' Bank DIP switch value = 03 (as per Appendix A.10 DIP Switch Setting)
- Then the Device Instance values for the devices are: = Device 1 Instance = 18153 = Device 2 Instance = 18154

3.3.4 Metasys N2: Setting the Node-ID

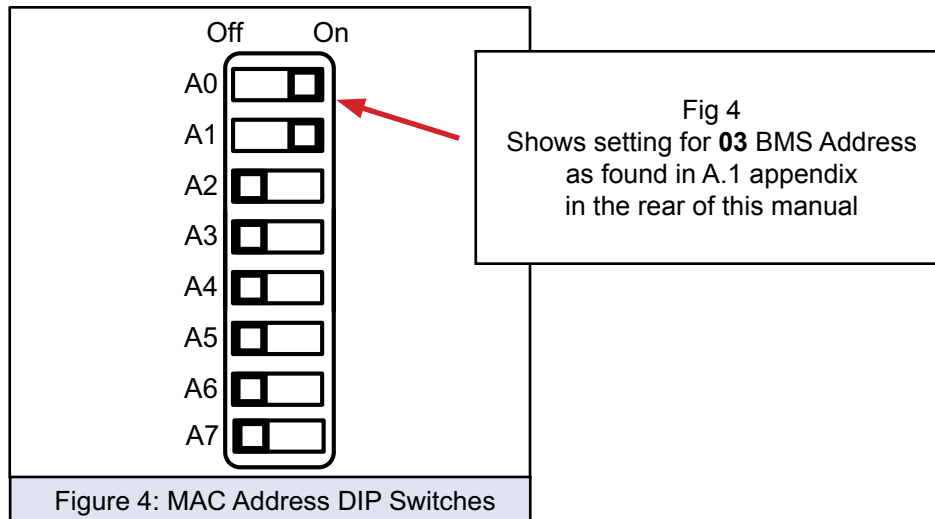
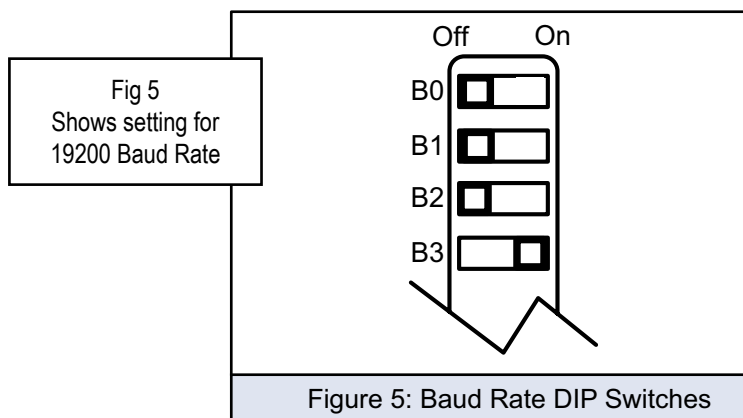
- Set DIP switches A0 – A7 to assign a Node-ID for Metasys N2 to the MCS-BMS-GATEWAY.
- Node-ID's range from 1-255.
- Refer to Appendix A.10 for the full range of addresses for setting Node ID.

3.3.5 BACnet MS/TP: Setting the Serial Baud Rate for BMS Network

DIP Switches B0 – B3 can be used to set the serial baud rate to match the baud rate required by the Building

Management System for BACnet MS/TP.

- The baud rate on MCS-BMS-GATEWAY for Metasys N2 is set for 9600. DIP Switches B0 – B3 are disabled for Metasys N2.



NOTE: When setting DIP Switches, please ensure that power to the board is OFF.

3.3.5.1. Baud Rate DIP Switch Selection

Baud	B0	B1	B2	B3
Auto	Off	Off	Off	Off
110	On	Off	Off	Off
300	Off	On	Off	Off
600	On	On	Off	Off
1200	Off	Off	On	Off
2400	On	Off	On	Off
4800	Off	On	On	Off
9600	On	On	On	Off
19200	Off	Off	Off	On
20833	On	Off	Off	On
28800	Off	On	Off	On
38400	On	On	Off	On
57600	Off	Off	On	On
76800	On	Off	On	On
115200	Off	On	On	On

Chapter - 4. Interfacing MCS-BMS-GATEWAY to Devices

4.1. MCS-BMS-GATEWAY Connection Ports

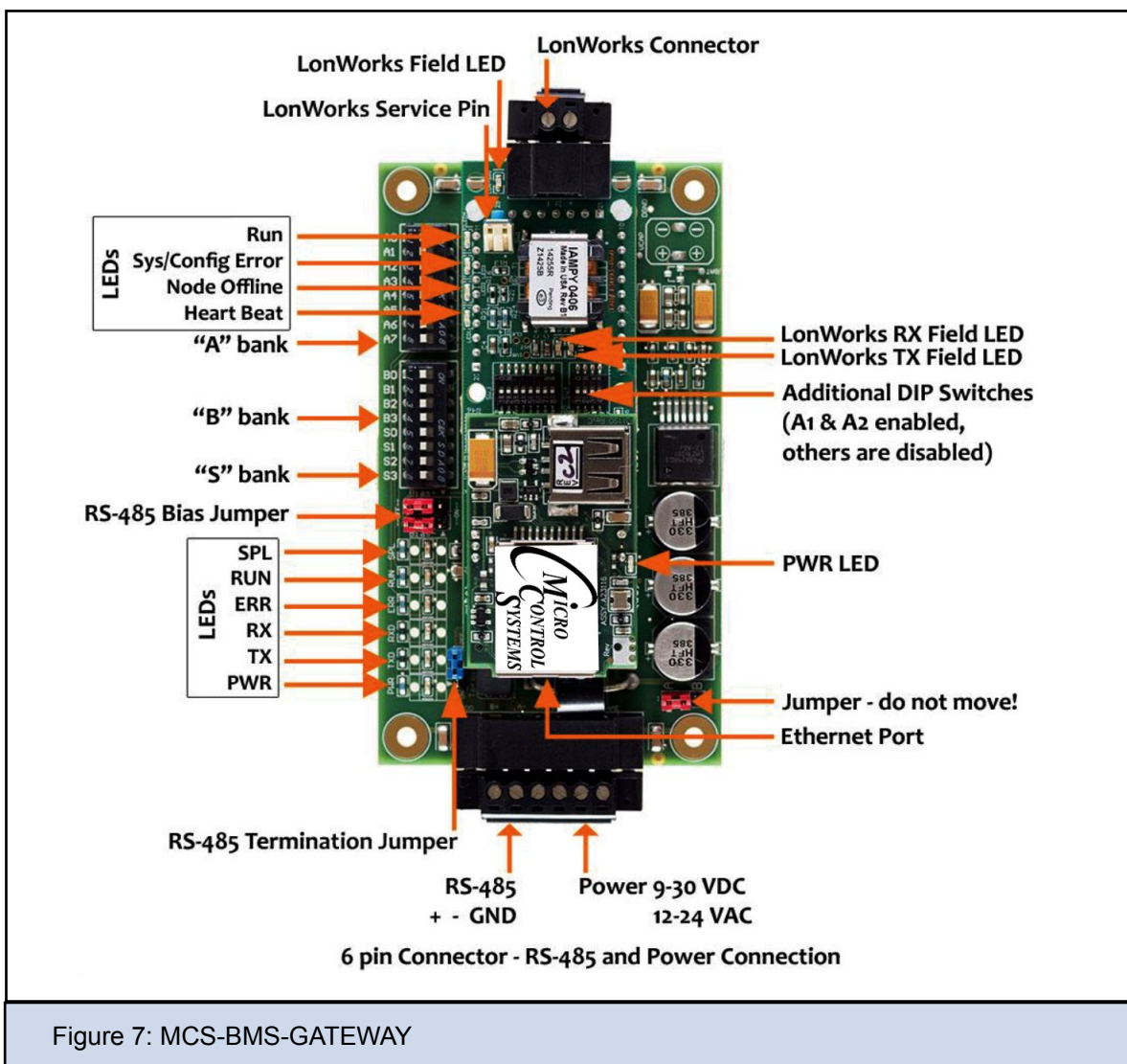


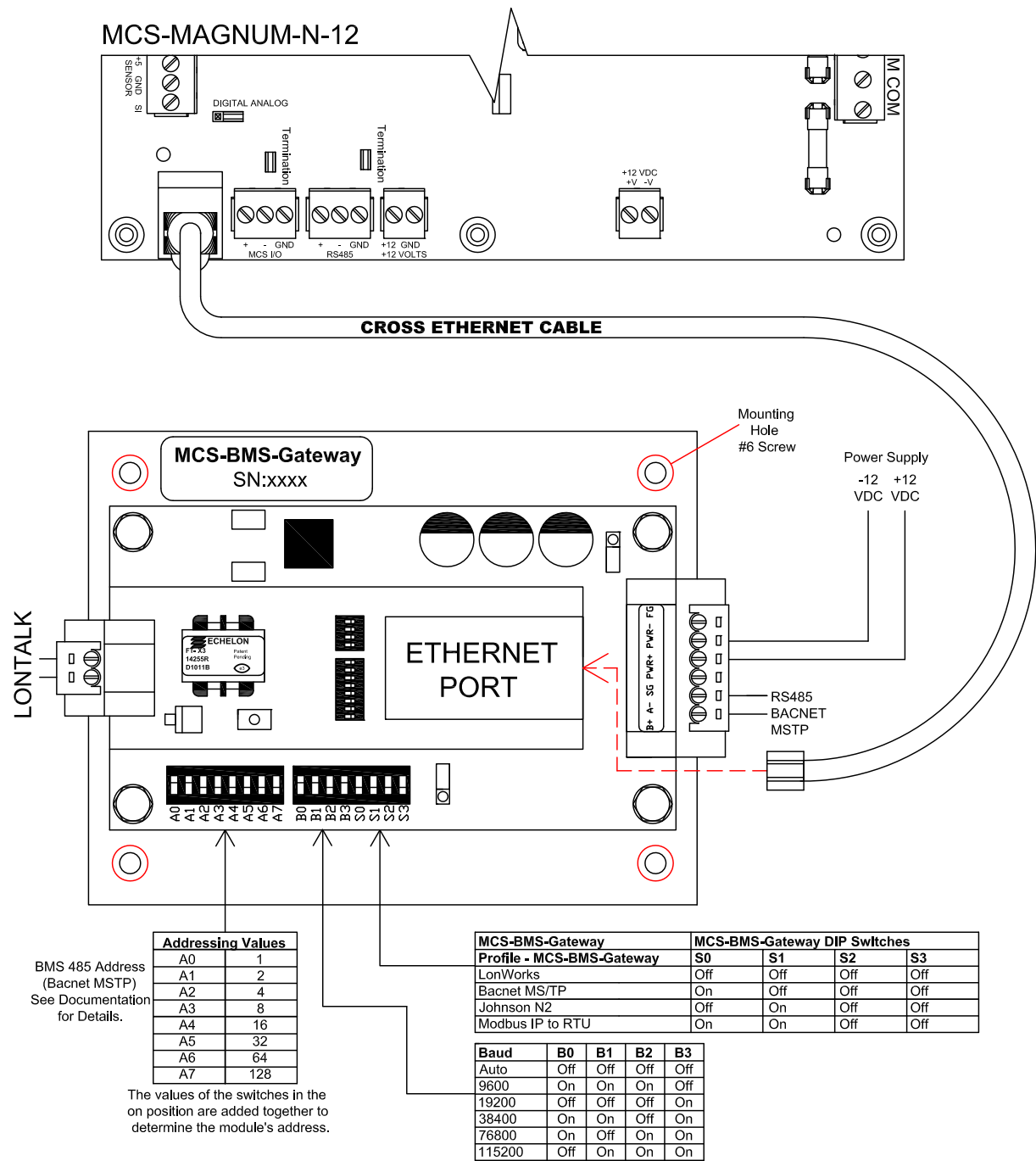
Figure 7: MCS-BMS-GATEWAY

4.2. Wiring diagram for connecting the MCS-Magnum

MCS-BMS-GATEWAY

MCS-BMS-GATEWAY to MCS-MAGNUM-N-12

Mounting & Wiring Diagram



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MCS-BMS-GATEWAY Wiring Diagram (2020-12-17).dwg



Figure 7 - Gateway to RS-485 wiring

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4.3. Device Connections to MCS-BMS-GATEWAY

MCS-BMS-GATEWAY 6 Pin Phoenix connector for RS-485 Devices.

- Pins 1 through 3 are for RS-485 devices.
- The RS-485 GND (Pin 3) is not typically connected
- Pins 4 through 6 are for power. Do not connect power (wait until Section 3.4).

Device Pins	MCS-BMS-GATEWAY Pin #	Pin Assignment
Pin RS-485 +	Pin 1	RS-485 +
Pin RS-485 -	Pin 2	RS-485 -
Pin GND	Pin 3	RS-485 GND
Power In (+)	Pin 4	V +
Power In (-)	Pin 5	V -
Frame Ground	Pin 6	FRAME GND

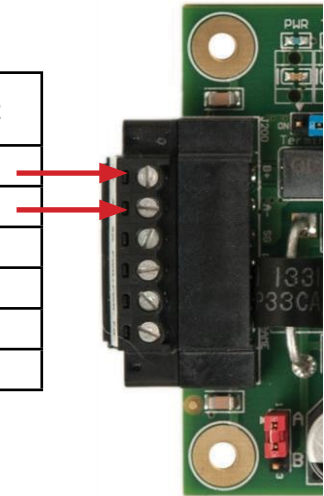


Figure 8: Power and RS-485 Connections

4.4. MCS-MAGNUM Address Settings

The MCS-BMS-GATEWAY is connected to the MCS-MAGNUM via Ethernet . The Bacnet Device ID and the IP address of the MCS-MAGNUM must be setup properly to enable successful communications between the MCS-BMS-GATEWAY and the MCS-MAGNUM.

The MCS-MAGNUM BACNET DEVICE ID must be set to the address specified on the MCS-BMS-Gateway's label (Example below shows - 18103).

Ethernet Communication

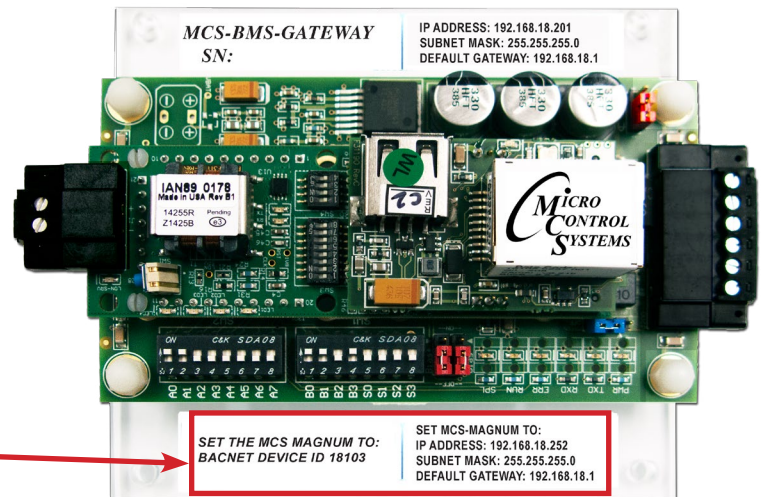
☒ Static IP ☐ Dynamic IP

IP Address	192	168	18	252
Subnet Mask	255	255	255	0
Default Gateway	192	168	18	1
MCS IP Port	5001			
BACnet Device ID	181	03	BACnet Port 47 808	
Extended BACnet Device ID	Hardcoded Port Numbers			
Used In 9.11 to Present MAG-So	Modbus Port = 502			
BACnet MV Values Start At:	Website Port = 80			
	☐ Zero ☒ One			

Information

trainingclass/systemoverview.xml

Set the MCS MAGNUM to address as shown on label:
Example
BACNET DEVICE ID 18103



NOTE: This BACNet Device ID will change depending on the address that will be set on the 'A' DIP Switches.

The MCS-MAGNUM BACNET DEVICE ID can be verified and changed (with the proper authorization code) from MCS-Magnum's keypad the keypad/LCD of a live unit.

1. To get authorized on Magnum do the following:
2. Press 'Menu'
3. Using ↑, ↓, →, or ← position curser to 'Passwords'
4. Press ← key.
5. Enter 4 digit password & press ←.
6. Press 'Menu' to make next selection.

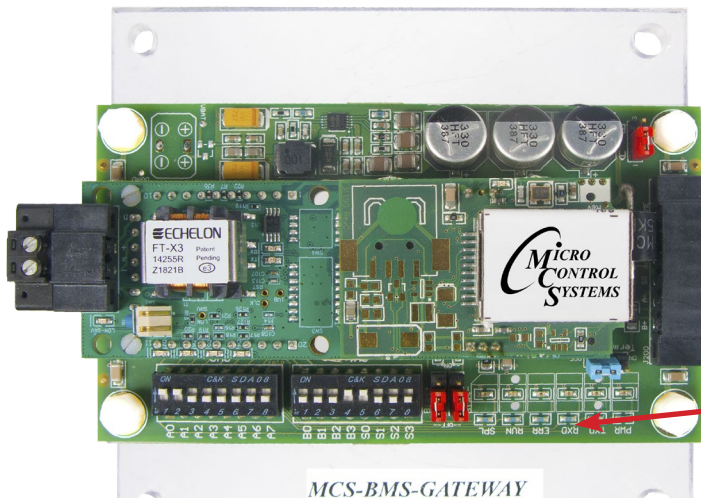
The following steps will display the Bacnet Device ID:



(to change the address you first must be authorized)

1. \Press the MENU key and then Using ↑, ↓, →, or ← position curser to Serv Tools then press the ENTER key.
2. then Using ↑, ↓, →, or ← position curser to Bacnet Setting then press Enter.
3. Use ↑, ↓, curser to change the Bacnet Device ID.
4. Set your desired address then press Enter.
5. Reset or cycle power to the magnum for the change to take effect.

The MCS-MAGNUM IP must be set to the address specified on the MCS-BMS-Gateway's label (Example - 192.168.18.101). Range of default settings: 101-150



SET MCS-MAGNUM TO:
IP ADDRESS: 192.168.18.101
SUBNET MASK: 255.255.255.0
DEFAULT GATEWAY: 192.168.18.1

The MCS-MAGNUM IP address can be verified and changed (with the proper authorization code) from the MCS-Magnum's Keypad/LCD of a live unit.

The following steps will display the IP Address settings:
 (to change the address you first must be authorized)

1. Press the MENU key and then Using ↑, ↓, →, or ← position cursor to Serv Tools then press the ENTER key.
2. Then Using ↑, ↓, → or ← position cursor to Serv Tools then press Enter.
3. Then Using ↑, ↓, →, or ← position cursor to Ethernet Network then press Enter.
4. Then Using ↑, ↓, →, or ← position cursor to IP address then press Enter.
5. Using ↑, ↓ to increase and decrease the first set of values then use the → to select the next set of numbers and use ↑, ↓ to increase and decrease the second value and repeat the previous steps for rest of the ip address.
6. Once you have set the desired address press the Enter key.
7. Reset or cycle power to the magnum for the change to take effect.

The MCS-MAGNUM IP address can be verified and changed (with the proper authorization code) from MCS-CONNECT of a live unit.

The following steps will display the IP Address settings:
 (to change the address you first must be authorized)

1. Connect to your MCS-Controller thru MCS-CONNECT
2. Click on the 'SERVICE' tab
3. Click on the 'ETHERNET' tab
4. Make changes to the IP address and any other changes as shown on the MCS-BMS-GATEWAY label.
5. Save your changes

4.5. Biasing the RS-485 Device Network

- An RS-485 network with more than one device needs to have biasing to ensure proper communication. The biasing only needs to be done on one device.
- The MCS-BMS-GATEWAY has 510 Ohm resistors that can be used to set the biasing.
- The MCS-BMS-GATEWAY's default positions from the factory for the Biasing jumpers are OFF.
- The OFF position is when the 2 RED biasing jumpers straddle the 4 pins closest to the outside of the board of the MCS-BMS-GATEWAY. (Figure 9)
- Only turn biasing ON:
- IF the BMS cannot see more than one device connected to the MCS-BMS-GATEWAY AND all the settings (wiring, and DIP switches) have been checked.
- To turn biasing ON, move the 2 RED biasing jumpers to straddle the 4 pins closest to the inside of the board of the MCS-BMS-GATEWAY.

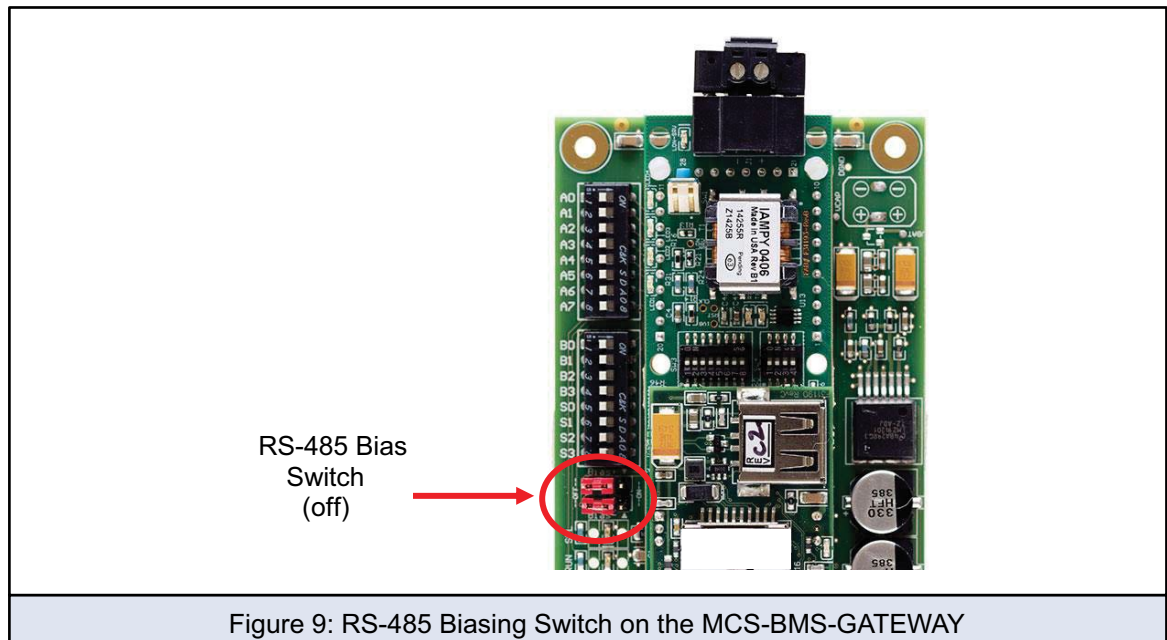
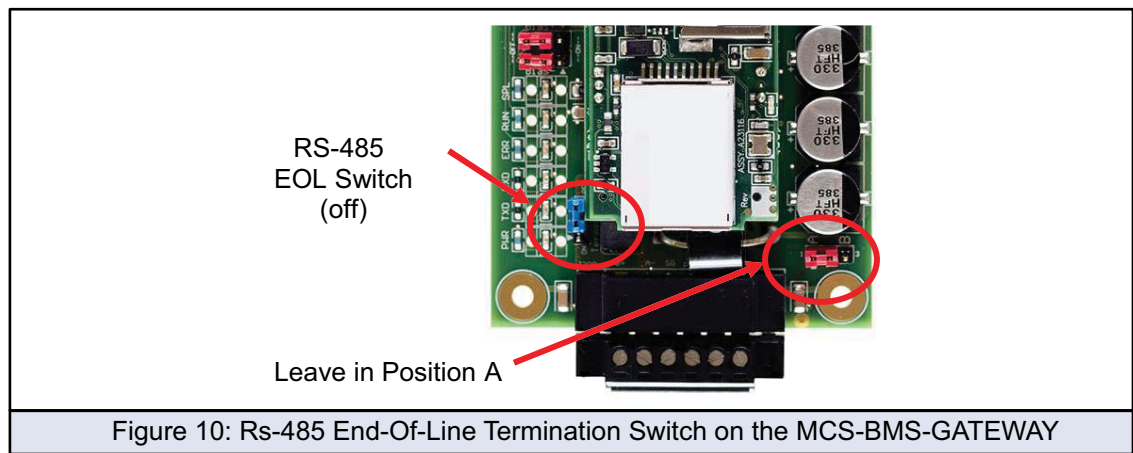


Figure 9: RS-485 Biasing Switch on the MCS-BMS-GATEWAY

4.6. End of Line Termination Switch for the Modbus RS-485 Device Network

- On long RS-485 cabling runs, the RS-485 trunk must be properly terminated at each end.
- The MCS-BMS-GATEWAY has an End of Line (EOL) blue jumper. The default setting for this Blue EOL switch is OFF with the jumper straddling the pins closest to the inside of the board of the MCS-BMS-GATEWAY.
- On short cabling runs the EOL switch does not need to be turned ON
- If the MCS-BMS-GATEWAY is placed at one of the ends of the trunk, set the blue EOL jumper to the ON position straddling the pins closest to the outside of the board of the MCS-BMS-GATEWAY.
- Always leave the single Red Jumper in the A position (default factory setting).

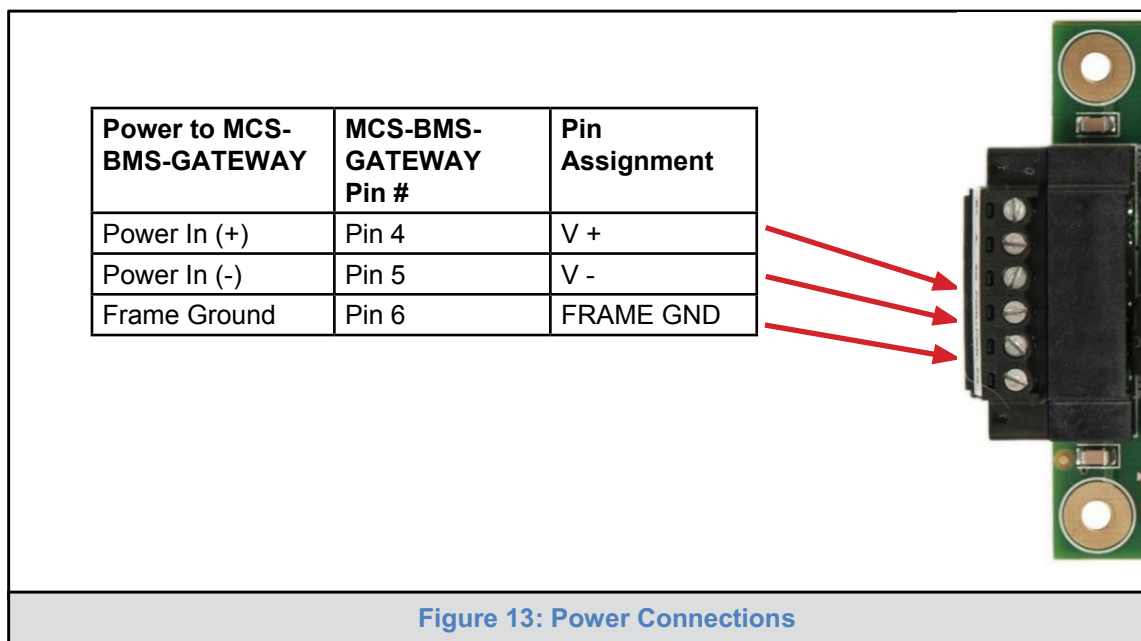


4.8. Power-Up MCS-BMS-GATEWAY

Apply power to MCS-BMS-GATEWAY as show below in Figure 13. Ensure that the power supply used complies with the specifications provided in chapter 9.

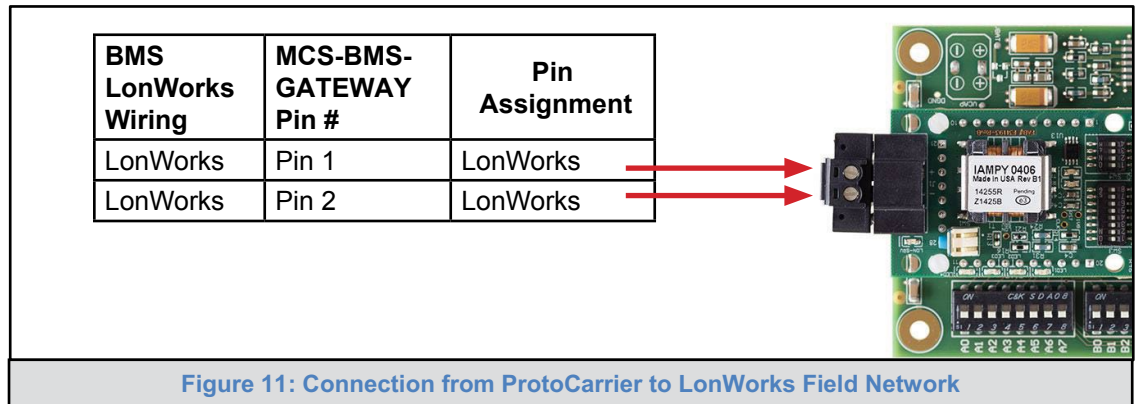
1. MCS-BMS-GATEWAY accepts either 9-30VDC or 12-24 VAC on pins 4 and 5.
2. Frame GND should be connected.

Power Requirement for MCS-BMS-GATEWAY External Gateway			
	Current Draw Type		
MCS-BMS-GATEWAY Family	12VDC/VAC	24VDC/VAC	30VDC
FPC – ED4 (Typical)	210mA	130mA	90mA
FPC – ED4 (Maximum)	250mA	170mA	110mA
NOTE: These values are 'nominal' and a safety margin should be added to the power supply of the host system. A safety margin of 25% is recommended.			
Figure 12: Required current draw for the MCS-BMS-GATEWAY			



4.7. Wiring Field Port to LonWorks Network

- Connect the LonWorks network wires to the 2-pin LonWorks connector on MCS-BMS-GATEWAY FPC-ED4 as shown below in Figure 11.
- Connect MCS-BMS-GATEWAY to the field network with the LonWorks terminal using approved cable per the FT-10 installation guidelines. LonWorks has no polarity.



Chapter - 5. LonWorks (FPC-ED4)

5.1. Commissioning the MCS-BMS-GATEWAY on a LonWorks network



Commissioning may only be performed by the LonWorks administrator.

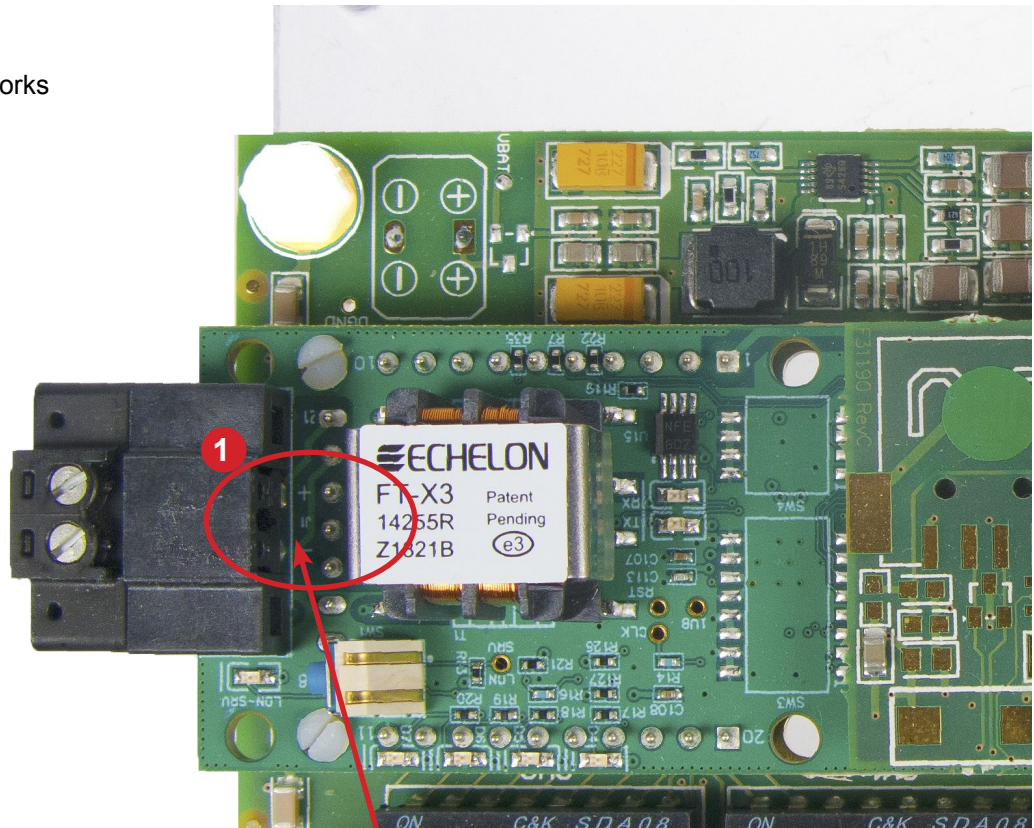
1. To commission the MCS-BMS-GATEWAY LonWorks port, press 'BLUE' Service Pin
2. This pin is located on the MCS-BMS-GATEWAY top base board.

See the illustration below on the MCS-BMS-GATEWAY where the button is located.

NOTE:

Inherent to the design of LonWorks is the intention that all nodes residing on a LonWorks network possess a profile which accurately describes the network variables available to the LonWorks network. This profile is declared to the LonWorks network by means of an External Interface File (XIF). This XIF remains unchanged for any particular profile. In other words, a change in the XIF is by definition a new profile.

Field Port to LonWorks



LonWorks 'BLUE' Service Pin

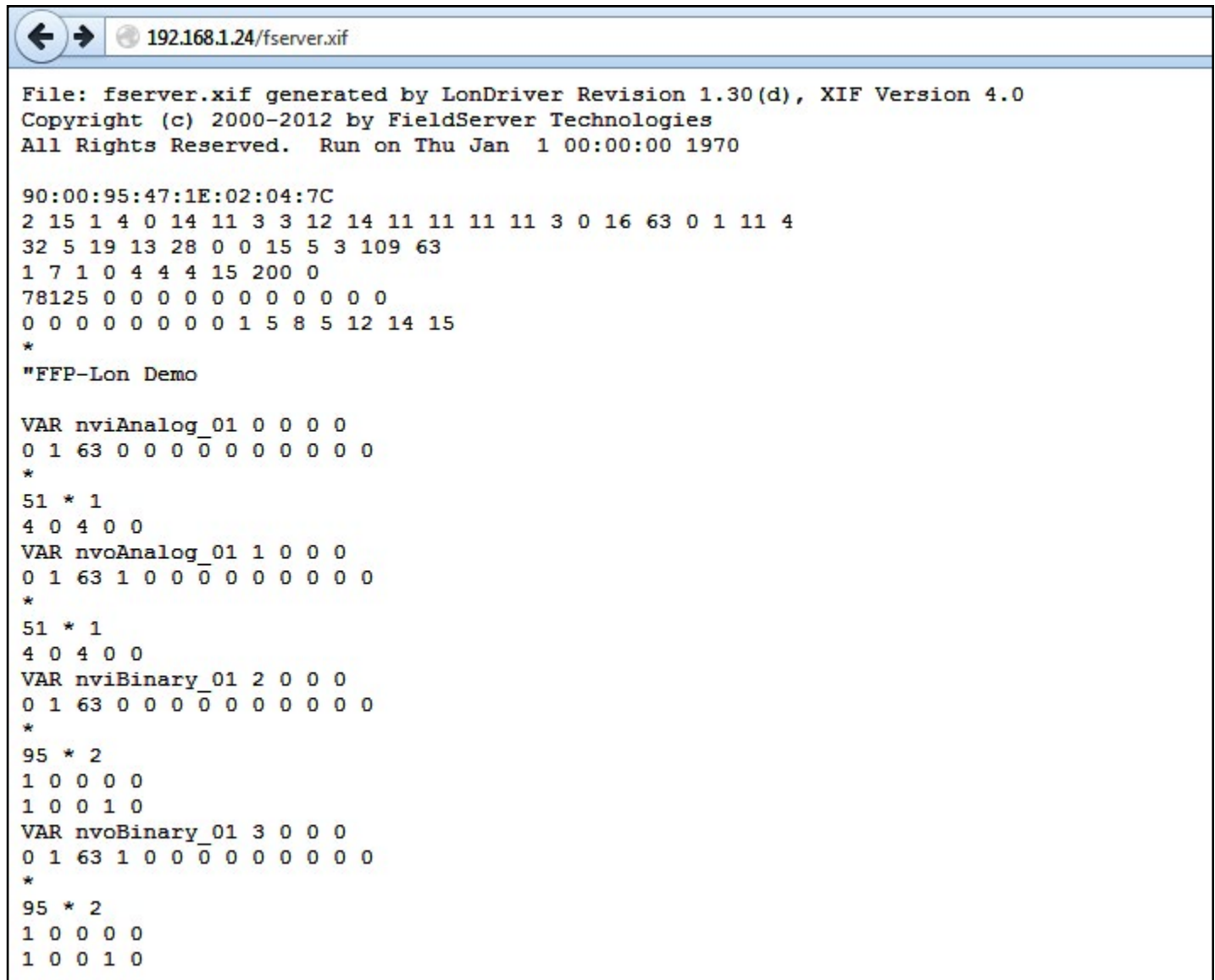
If an XIF file is required, see steps in next section to generate XIF.

- Open a web browser and go to the following address: [IP Address of MCS-BMS-GATEWAY]/fserver.xif
- **Example: 192.168.10.201/fserver.xif**
- If the web browser prompts to save the file, save the file onto the PC. If the web browser displays the xif file as a web page, save the file onto the local PC as **fserver.xif**

Figure 18: Sample of Fserver.XIF File Being Generated

NOTE:

The external interface file (.XIF) for the FieldServer can be uploaded from the FieldServer for the particular application. The FieldServer differs from most other LonWorks devices in that its XIF file is not fixed due to varying applications. The list of points available to the network will vary depending on the other networks connected to the FieldServer, and the requirements of the particular application.



```

File: fserver.xif generated by LonDriver Revision 1.30(d), XIF Version 4.0
Copyright (c) 2000-2012 by FieldServer Technologies
All Rights Reserved. Run on Thu Jan 1 00:00:00 1970

90:00:95:47:1E:02:04:7C
2 15 1 4 0 14 11 3 3 12 14 11 11 11 11 3 0 16 63 0 1 11 4
32 5 19 13 28 0 0 15 5 3 109 63
1 7 1 0 4 4 4 15 200 0
78125 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 1 5 8 5 12 14 15
*
"FFP-Lon Demo

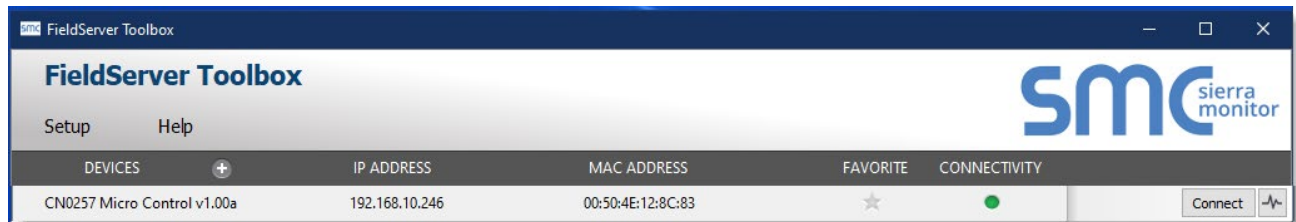
VAR nviAnalog_01 0 0 0 0
0 1 63 0 0 0 0 0 0 0 0 0
*
51 * 1
4 0 4 0 0
VAR nvoAnalog_01 1 0 0 0
0 1 63 1 0 0 0 0 0 0 0 0
*
51 * 1
4 0 4 0 0
VAR nviBinary_01 2 0 0 0
0 1 63 0 0 0 0 0 0 0 0 0
*
95 * 2
1 0 0 0 0
1 0 0 1 0
VAR nvoBinary_01 3 0 0 0
0 1 63 1 0 0 0 0 0 0 0 0
*
95 * 2
1 0 0 0 0
1 0 0 1 0

```


Chapter - 6. Programming a MCS-BMS GATEWAY

- Ensure that FieldServer Toolbox is loaded onto the local PC. Otherwise, download the FieldServer-Toolbox.zip via the MCS WEBSITE Software Downloads.
- Extract the executable file and complete the installation.

1. Connect a standard Cat-5 Ethernet cable between the user's PC and MCS-BMS-GATEWAY.
2. Double click on the FS Toolbox Utility and click Discover Now on the splash page.
3. Check for the IP Address of the desired gateway.



4. NOTE: If the connect button is greyed out and the CONNECTIVITY light is yellow, the MCS-BMS-GATEWAY IP Address must be set to be on the same network as the PC.

6.1. Connecting A PC to the MCS-BMS-GATEWAY

1. Check that the IP network adapter settings of the PC matches the MCS-BMS-GATEWAY. The Default IP Address of the MCS-BMS-GATEWAY is 192.168.18.201, Subnet Mask is 255.255.255.0, Default Gateway is 192.168.18.1. Ensure that the IP address is 192.168.18.xxx, the Subnet mask is 255.255.255.0 and the Default Gateway is 192.168.18.1
2. Ensure that the PC and MCS-BMS-GATEWAY are on the same IP Network, or assign a Static IP Address to the PC on the 192.168.18.XXX network
3. Ensure that all other network adapters active on the PC, especially wireless adapters are disabled

6.2. Connect the PC to MCS-BMS-GATEWAY via the Ethernet Port

6.2.1 For Windows 7 or later

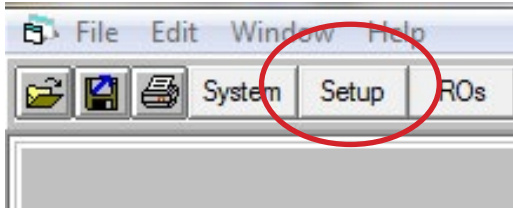
1. Find the search field in the local computer's taskbar (usually to the right of the windows icon and type in "Control Panel".
2. Click "Control Panel", click "Network and Internet"
3. Right-click on Local Area Connection > Properties



- Click the Okay button to close the Internet Protocol window and the Close button to close the Ethernet Properties window.

8.1. How to Create CSV Files:

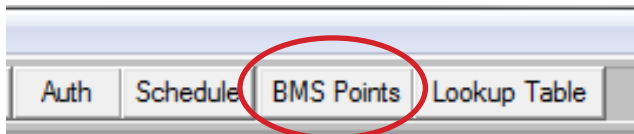
- Open MCS-Config program and load the config you are working on.
- Click on Setup.



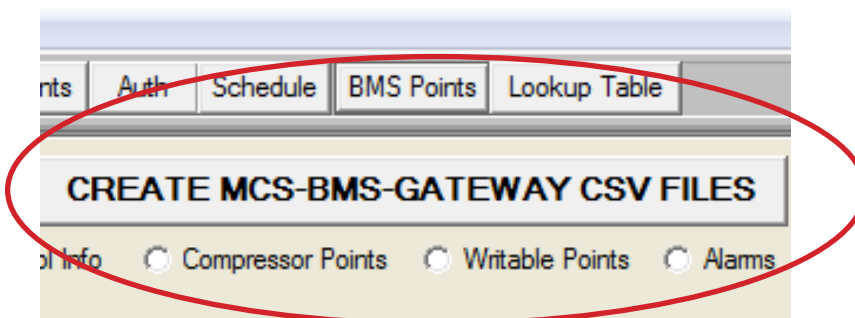
- Be sure to set IP Address, Subnet Mask, Default Gateway, MCS IP Port and Bacnet Device ID, then save config file. **DO NOT CHANGE BACNET DEVICE ID ONCE CSV FILES ARE CREATED!!**

A screenshot of the 'Ethernet Communication' configuration window. The 'Static IP' tab is selected. The window contains several input fields: IP Address (192.168.18.101), Subnet Mask (255.255.255.0), Default Gateway (192.168.18.1), MCS IP Port (5001), BACnet Device ID (18103), BACnet Port (47808), Extended BACnet Device ID, Used In 9.11 to Present MAG-So, and BACnet MV Values Start At (Zero/One). The 'BACnet Device ID' field is highlighted with a red box. Below the main configuration area is an 'Information' section.

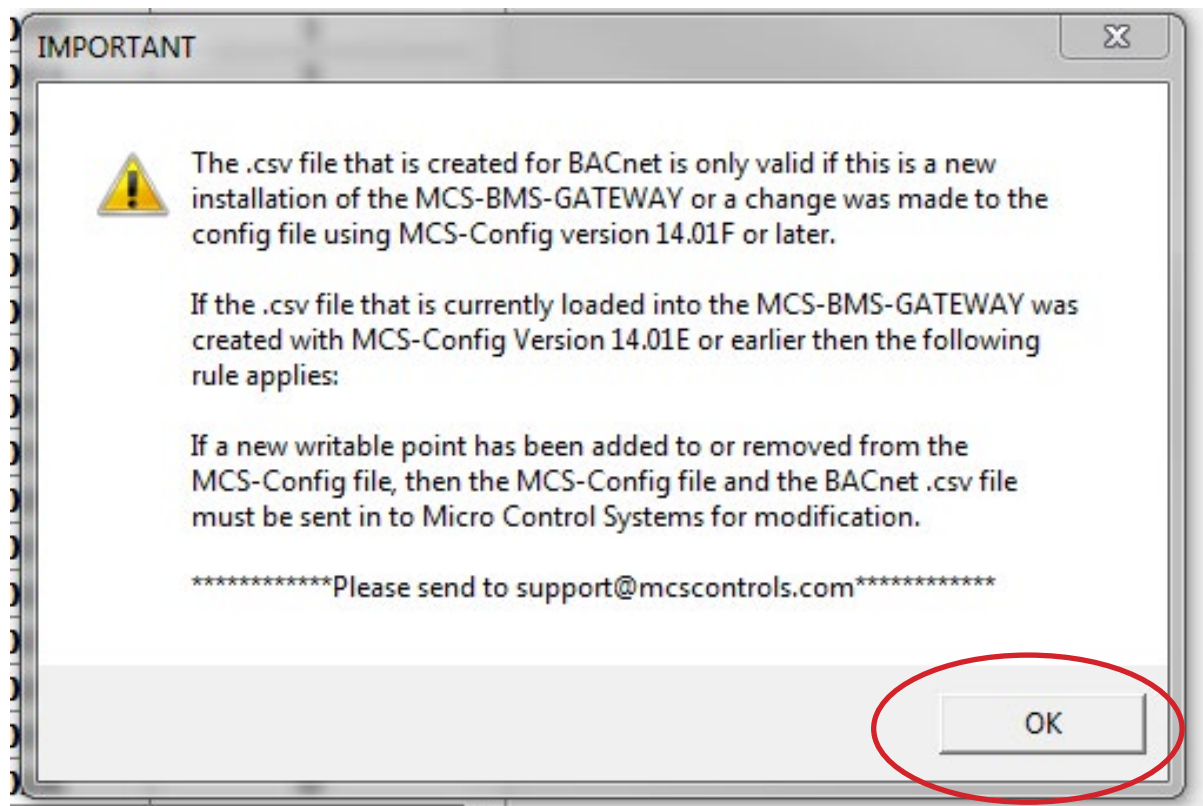
- Click on BMS POINTS.



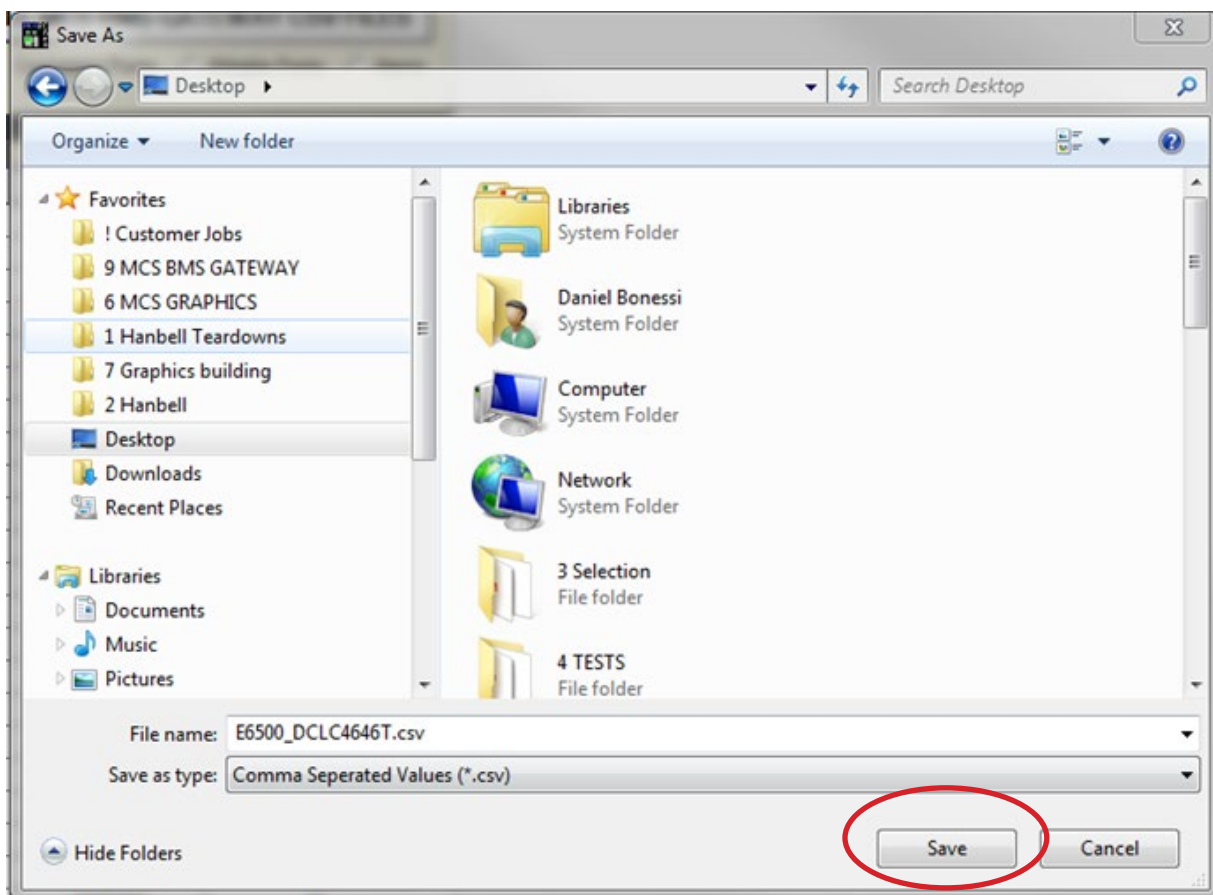
- Click on Create MCS-BMS-Gateway CSV Files.



6. When popup window comes up click ok.



7. When prompted, select the file location where you want to save the csv files. This would be the time to name the CSV files, there is a 15 character maximum not including the file extension. If you do not name the file it will default to the first 15 characters of the config name. Then click save



MCS-Config will create FIVE CSV file:

- Config.csv
- bac.csv = BACnet
- lon.csv = Lontalk
- Jn2.csv = Johnson N2
- mod.csv = Modbus

8.2. How to Program the MCS-BMS-GATEWAY with the CSV Files:

What's Needed:

- A. Field Server Toolbox program installed on a computer.*
 - B. An Ethernet Cable. (crossover cable is only required when connected from gateway to magnum)*
 - C. CSV files created from the MCS-MAGNUM Controller CFG.*
1. Connect PC to a powered BMS-GATEWAY with the an Ethernet Cable.
 2. Open Field Server Toolbox Program. (If running program for the first time click on **'DISCOVER NOW'**). The MCS-BMS-GATEWAY you're connected to will show up on the top line giving you the IP address and MAC address. Also you may need to right click and run as Administrator if the Gateway did not show up.
 3. Click **Connect** button top right, if the **Connect** button is greyed out go to note 3a.
 4. Click **Diagnostics and Debugging**.
 5. Click **Setup**.
 6. Click **File Transfer**.
 7. Click the **Configuration tab**, then click **Choose Files**.
 8. In **Pop Up file browser**, navigate to the saved CSV files, select **Config** and click open .
 9. Click **Submit**.
 10. Click **System Restart** to reboot the BMS-GATEWAY card and refresh the web browser.
 11. Click **Setup**
 12. Click **File Transfer**
 13. Click the **General Tab**, then **click Choose Files**
 14. Select the correct BMS protocol file, than click open.
 - a. bac for BacNet MS/TP
 - b. jn2 for Johnson N2
 - c. lon for Lontalk
 - d. mod for Modbus over IP
 15. Click **Submit**.
 16. Click **System Restart** to reboot the BMS GATEWAY card and refresh the web browser.
 17. Close the web browser and the Field Server Toolbox.
 18. Reconnect the BMS GATEWAY card to the MCS MAGNUM and have the building management system discover the card.

Note 3a

You need to setup your PC to the same network as the BMS Gateway.

1. Type in **'ncpa.cpl'** in the task bar search field.
2. Right click on **Local Area Connection** and left click on **Properties**.
3. Double left click on **Internet Protocol Version 4 (TCP/IP v4)**.
4. Select **'Use the following IP address'** and enter a static IP address on the same subnet. With the last number being different than the Gateway(192.168.18.xx)
5. Click **OK**.
6. Open **Field Server Toolbox** and click on **Discover Now**. The **Connect** button should be accessible.

Chapter - 9. APPENDIX

9.1. BMS Address DIP Switch Settings

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On	On	On	On	On	On	On	On	255



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