

User Manual

Sparkplug B Startup Guide

This guide walks through Sparkplug B settings on cMT Series and monitoring using Ignition.

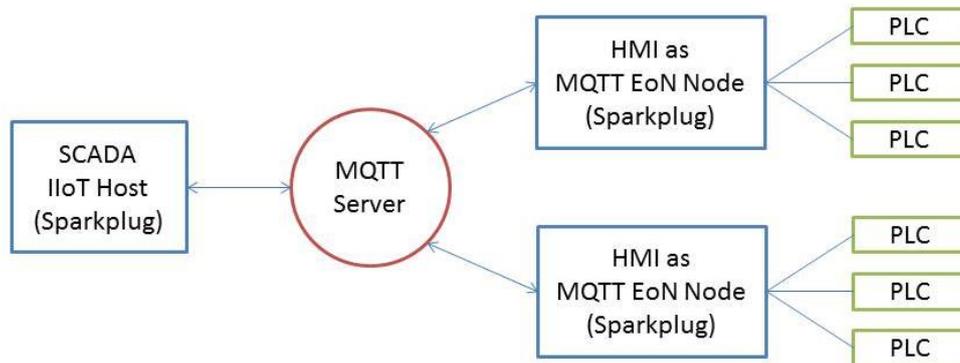
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1. Overview

Sparkplug B is a specification designed based on the characteristic features of IoT applications. It helps define topics and messages that are not specified by standard MQTT, and allows non-MQTT terminal devices to transfer data with MQTT Server through Edge of Network, which can be HMIs in this architecture.



Advantages of Sparkplug:

- Multi-programming language support and cross-platform.
- Binary encoding which is more efficient than JSON.
- NDATA/DDATA (Node Data Message / Device Data Message) only publishes the data that has changed.

In this manual, HMI's local MQTT server is used for explaining setup process.

2. System Requirement

Software Version: EasyBuilder Pro V6.1.1 or later

Applicable models: cMT Series HMI

3. Download Links

Ignition : <https://inductiveautomation.com/downloads/ignition>

MQTT Modules:

<https://inductiveautomation.com/pricing/ignition/third-party-modules>

4. Installing Ignition

1. Run Ignition Installer.
2. Select Ignition for Platform Edition, and Typical for Installation Mode.
3. Ignition page opens after installation. Or enter “localhost:8088” in the browser.
4. Click [Configuration section] to open Ignition Gateway, or enter “localhost:8088/main/web/config” in the browser.



Congratulations, Ignition is installed and running!

Whether you need an OPC-UA server, a SQL datalogger, an HMI, or a full-blown SCADA or MES solution, Ignition can handle it. Here are a few common steps to help get you started:

- 1 Login to the **configuration section**.

The default username and password are: **admin / password**

Change the password or configure your own authentication profile in the **Security > Authentication** section

5. The default username/password of Ignition Gateway are: **admin/password**.
6. Select [SYSTEM] » [Modules] on the left, and select [Install or Upgrade a Module] at the bottom of the page.

[→ Install or Upgrade a Module...](#)

7. Click [Choose File].
8. Add MQTT Engine Module. This module can be found in Cirrus Link Solutions list after being added.

Cirrus Link Solutions

[View Certificate](#)

Name	Version	Description	License	State	
MQTT Engine	3.4.0 (b2018022318)	An MQTT connector to multiple MQTT servers	Trial	Running	More ▾ restart

9. Find [MQTT ENGINE] » [Settings]. Click [Servers] » [Create a new MQTT Server].

MQTT Engine Settings

General

Servers

Namespaces

Name	URL	Server Type	Username	Certificates	Status	
Chariot SCADA	tcp://localhost:1883	MQTT Distributor	admin		Connected	delete edit

[→ Create new MQTT Server...](#)

10. Select Third Party as Server Type, and configure the settings.

Main	
Name	<input type="text" value="cMT3090"/> The friendly name of this MQTT Server
URL	<input type="text" value="tcp://192.168.1.100:1883"/> The URL of this MQTT Server. Should be of the form tcp://mydomain.com:1883 or ssl://mydomain.com:8883
Server Type	<input type="text" value="Third Party"/> The type of MQTT Server to connect to
Username	<input type="text"/> The username for this MQTT connection if required by the MQTT Server (optional)
Change Password?	<input type="checkbox"/> Check this box to change the existing password.
Password	<input type="password"/> The password for this MQTT connection if required by the MQTT Server (optional)
Password	<input type="password"/> Re-type password for verification.
Certificates	<input type="button" value="Choose File"/> No file chosen Files: <input type="text"/>

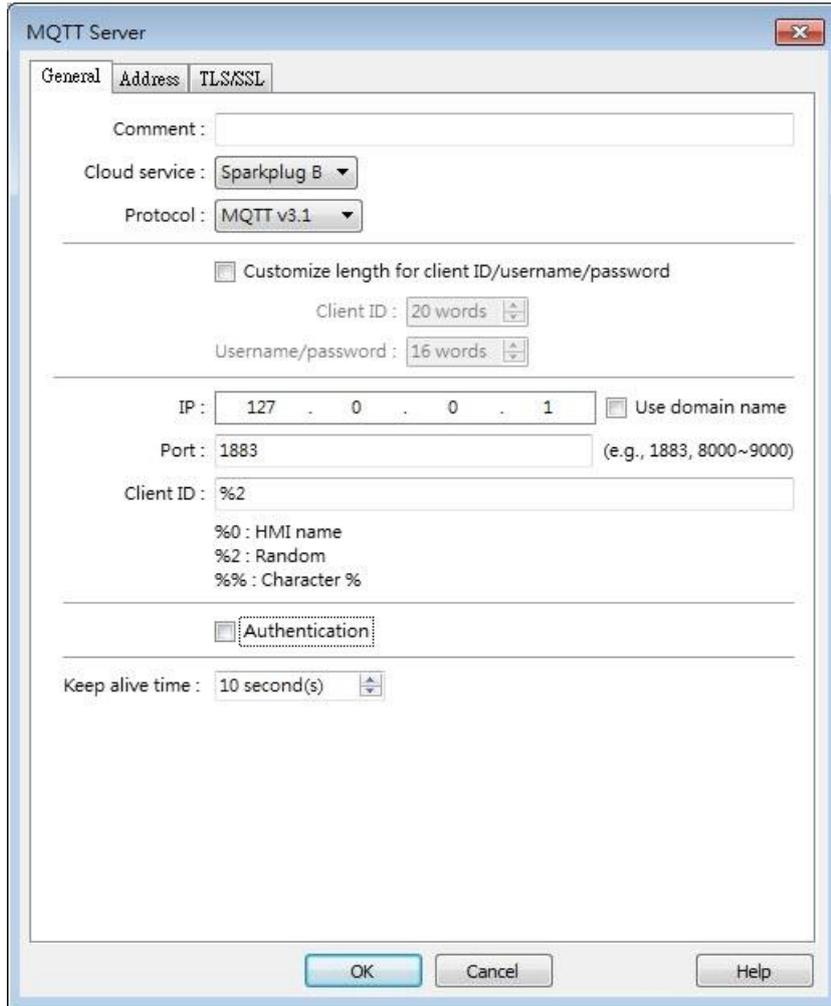
- To enable write operations of Ignition Designer, do not select [Enable blocking of outbound edge node tag writes] and [Enable blocking of outbound device tag writes].

Miscellaneous	
Block Node Commands	<input type="checkbox"/> Enable blocking of outbound edge node tag writes
Block Device Commands	<input type="checkbox"/> Enable blocking of outbound device tag writes
File Policy	<input type="text" value="Ignore"/> The policy for handling incoming files
File Location	<input type="text"/> The directory to store files in when using the "Store" file policy (optional)

- Ignition Gateway is now all set.

5. Creating EasyBuilder Project

1. Create a new cMT project file, select [MQTT] in [IIoT/Energy] tab.
2. In General tab select [Sparkplug B] for [Cloud service]. When local HMI is used as MQTT Server, set IP address to 127.0.0.1, and Port number to 1883. Authentication is optional, while selected, please enter username and password.



MQTT Server

General Address TLS/SSL

Comment :

Cloud service : Sparkplug B

Protocol : MQTT v3.1

Customize length for client ID/username/password

Client ID : 20 words

Username/password : 16 words

IP : 127 . 0 . 0 . 1 Use domain name

Port : 1883 (e.g., 1883, 8000~9000)

Client ID : %2

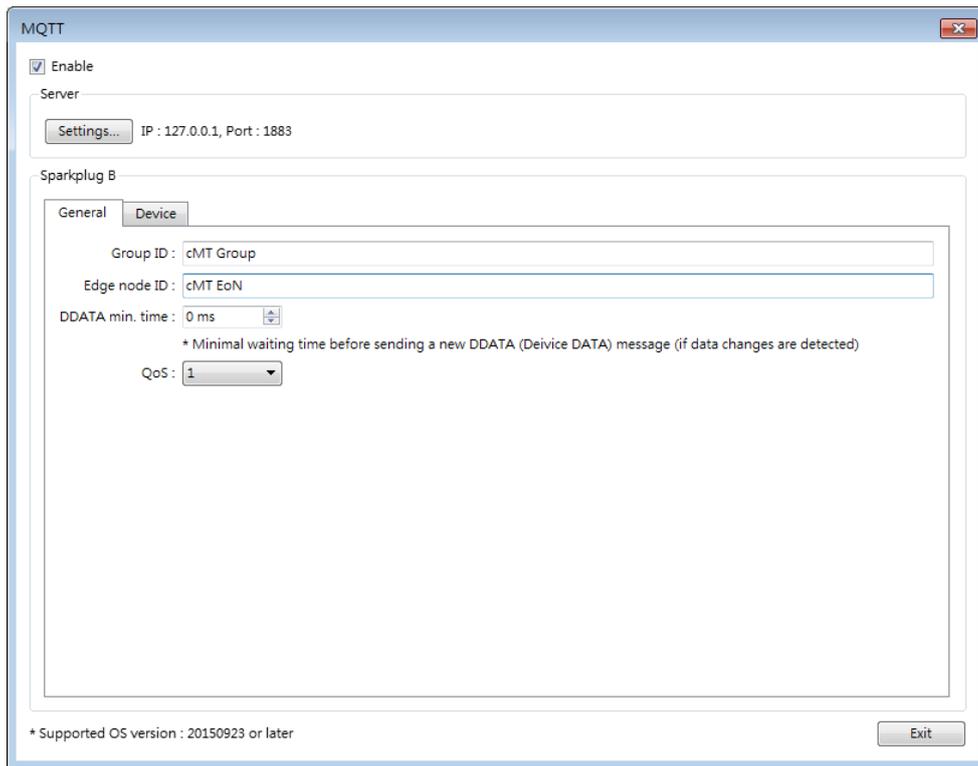
%0 : HMI name
%2 : Random
%% : Character %

Authentication

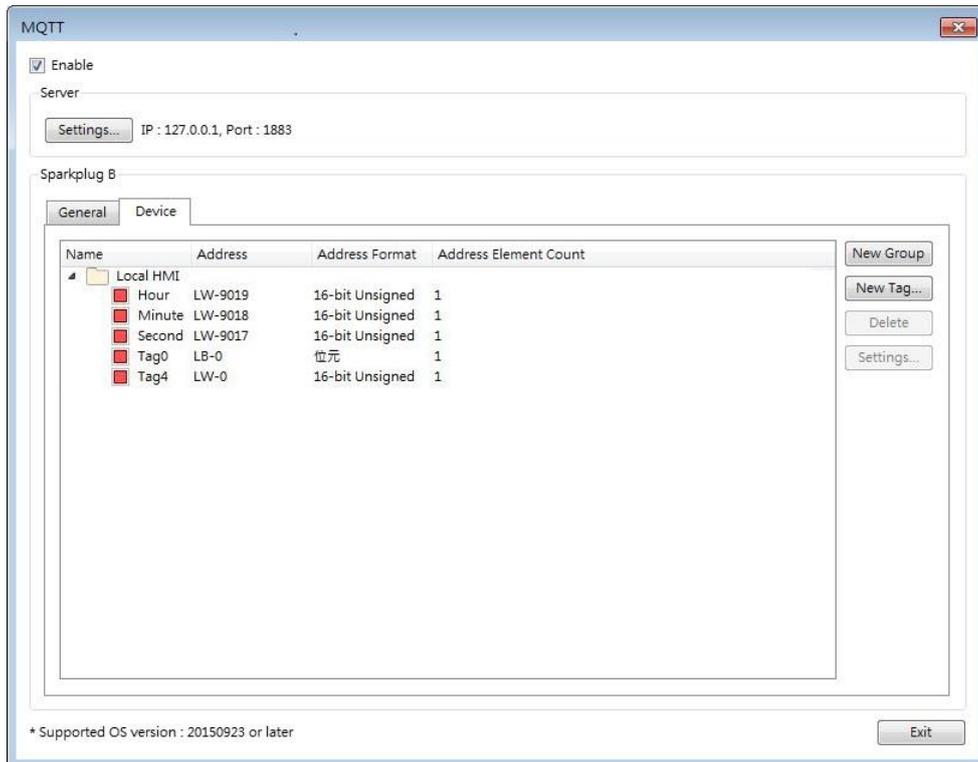
Keep alive time : 10 second(s)

OK Cancel Help

3. In Sparkplug B group box, open General tab, and enter [Goupt ID] and [Edge node ID].



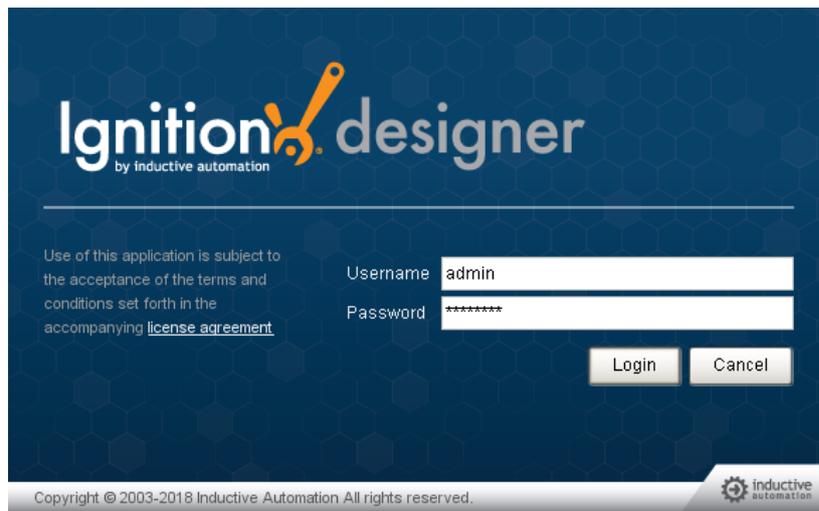
4. In [Device] tab create several tags readable using Sparkplug B.



5. Download this project file to HMI.

6. Obtaining EoN Tag using Ignition Designer

1. Click [Launch Designer] in the upper-right corner of Ignition Gateway page. The “designer.jnlp” file will be downloaded by doing so.
2. Run designer.jnlp file after download.
3. The default username/password of Ignition Designer are: admin/password.

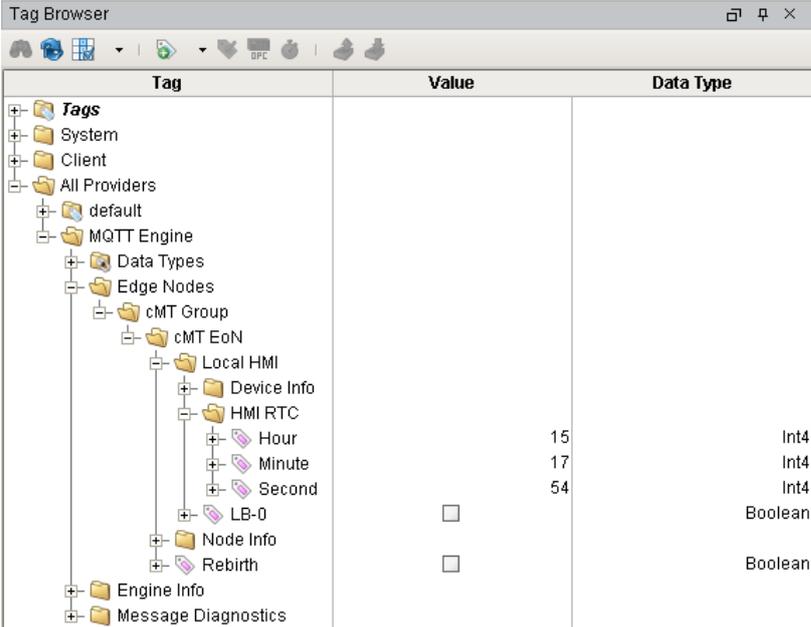


4. Create a new project, enter project name in its field and then click [Create New Project].



5. When successfully connected, the tags added in EasyBuilder project file can be found in Tag Browser’s [All Providers] » [MQTT Engine] » [cMT

Group] (Group ID) » [cMT EoN] (Edge node ID).



Tag	Value	Data Type
Tags		
System		
Client		
All Providers		
default		
MQTT Engine		
Data Types		
Edge Nodes		
cMT Group		
cMT EoN		
Local HMI		
Device Info		
HMI RTC		
Hour	15	Int4
Minute	17	Int4
Second	54	Int4
LB-0	<input type="checkbox"/>	Boolean
Node Info		
Rebirth	<input type="checkbox"/>	Boolean
Engine Info		
Message Diagnostics		

7. References

1. Cirrus Link Documentation:

<https://docs.chariot.io/display/CLD/Cirrus+Link+Documentation>

2. Ignition User Manual:

<https://docs.inductiveautomation.com/display/DOC79/Ignition+User+Manual>