



Enable and Use MQTT

Anybus CompactCom 40

APPLICATION NOTE

SCM-1202-105 EN 1.1 ENGLISH

1 About this Document

Application note presenting how to setup and configure an Anybus CompactCom 40 series IIoT Ethernet module to enable MQTT, and how to subscribe to published data using third party tools Mosquitto and MQTT.fx.

2 Prerequisites

- Download and install MQTT.fx (<http://mqttfx.jensd.de>).
- Download and install Mosquitto (<https://mosquitto.org>). Guides on how to install Mosquitto on different platforms are available on the internet.
- An Anybus CompactCom 40 series IIoT Ethernet module supporting MQTT. PROFINET version 1.39 or later, EtherNet/IP™ version 1.40 or later
- Possibility to modify and update the host application.

2.1 Updating the Host Application

To enable the MQTT client on the Anybus CompactCom 40 module, the MQTT host object must be implemented in the host application. Attribute #1, MQTT Mode, must be set to the value 1. Other attributes and services are optional to implement to customize the MQTT client's behavior.

The definition of the MQTT host object is available in the IIoT Network Guide of each product (see the support pages for Anybus CompactCom 40 EtherNet/IP™ and PROFINET available at www.anybus.com/support).

If using the Anybus Host Application Example Code available in the Anybus CompactCom Starterkit, the MQTT host object and the attribute MQTT Mode are enabled and configured in `abcc_obj_cfg.h`. Support for the MQTT host object is included from version 3.05 of the Anybus Host Application Example Code.



Implementing attribute #1, MQTT Mode of the MQTT host object is required to enable MQTT on Anybus CompactCom 40 devices.

The host application must support the Application object command `Get_Data_Notification` to be able to publish data on MQTT. The Anybus CompactCom 40 will yield publication resources to the Host Application by sending this request. The Host Application then responds to the request once it has data to publish.

In the Anybus Host Application Example Code, the `Get_Data_Notification` command is enabled by defining `APP_CMD_GET_DATA_NOTIFICATION_ENABLE` to `TRUE`.



Implementing Application Object command `Get_Data_Notification` is required in order to publish MQTT data on Anybus CompactCom 40 devices.

MQTT topic strings will be automatically generated by default. For published ADI datasets, the default topic string is "Parameter/<ADI name>". A topic example for an ADI named "SPEED" (as in the default ADI mapping example in the Host Application Example Code) would be "Parameter/SPEED". See the IIoT Network guide for more information regarding topic strings.

3 Configuration

Start the Mosquitto software. It will act as an MQTT message broker between the CompactCom module and the MQTT.fx software.

An easy check to verify that MQTT is enabled when the module has started is to enter the configuration or the status web page of the module. Both the configuration and status web page shall have an MQTT section present. From the configuration web page it is possible to configure connection and publish options of MQTT. Once a broker URL has been configured and the CompactCom module has been restarted, it is possible to find the connection status in the MQTT section of the status web page. If the CompactCom module fails to resolve the configured URL or fails to authenticate the connection, this will be communicated through that page.

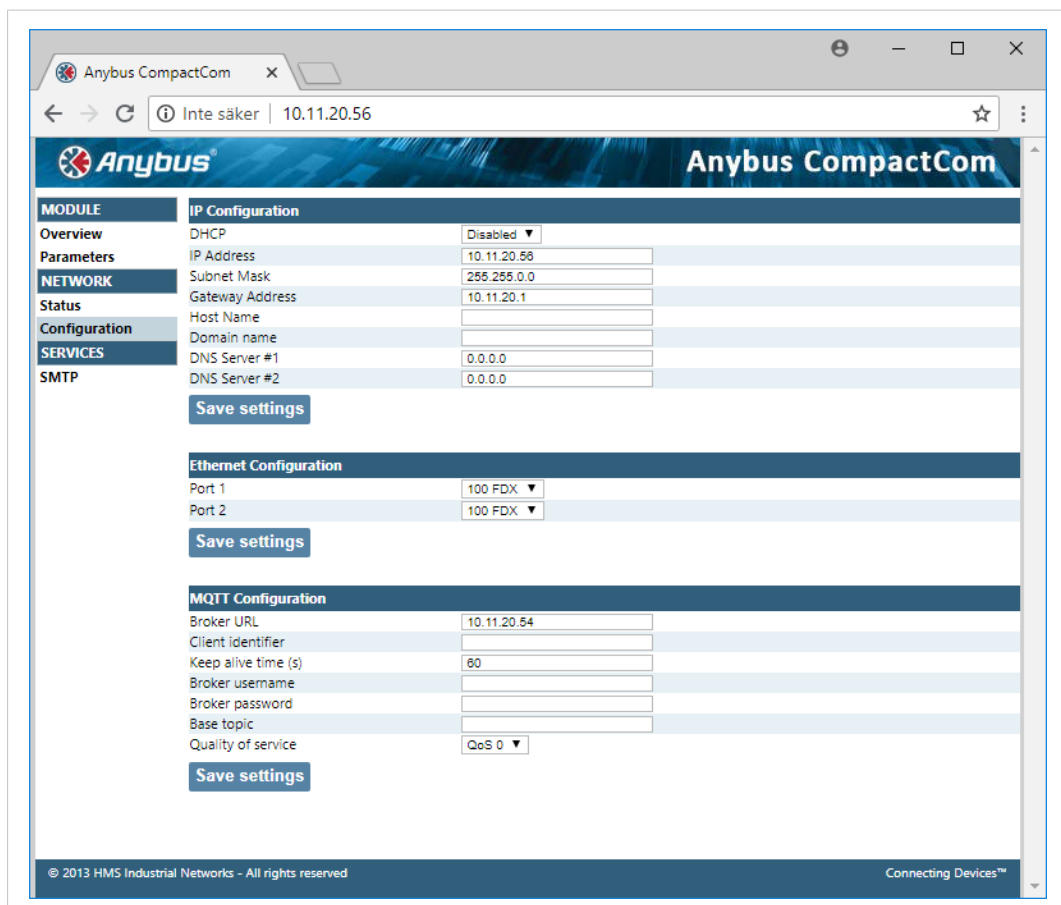


Fig. 1 Anybus CompactCom 40 MQTT web page

4 Publishing Data Notifications

To receive data notifications from the CompactCom 40 module the PC client MQTT.fx will be used. To connect to the same Mosquitto instance as the CompactCom 40 module, enter the Connection profiles view from the Extras menu (Extras - Edit Connection Profiles). Configure the connection details and other options needed for your Mosquitto server. Once done, apply the configuration and exit this view.

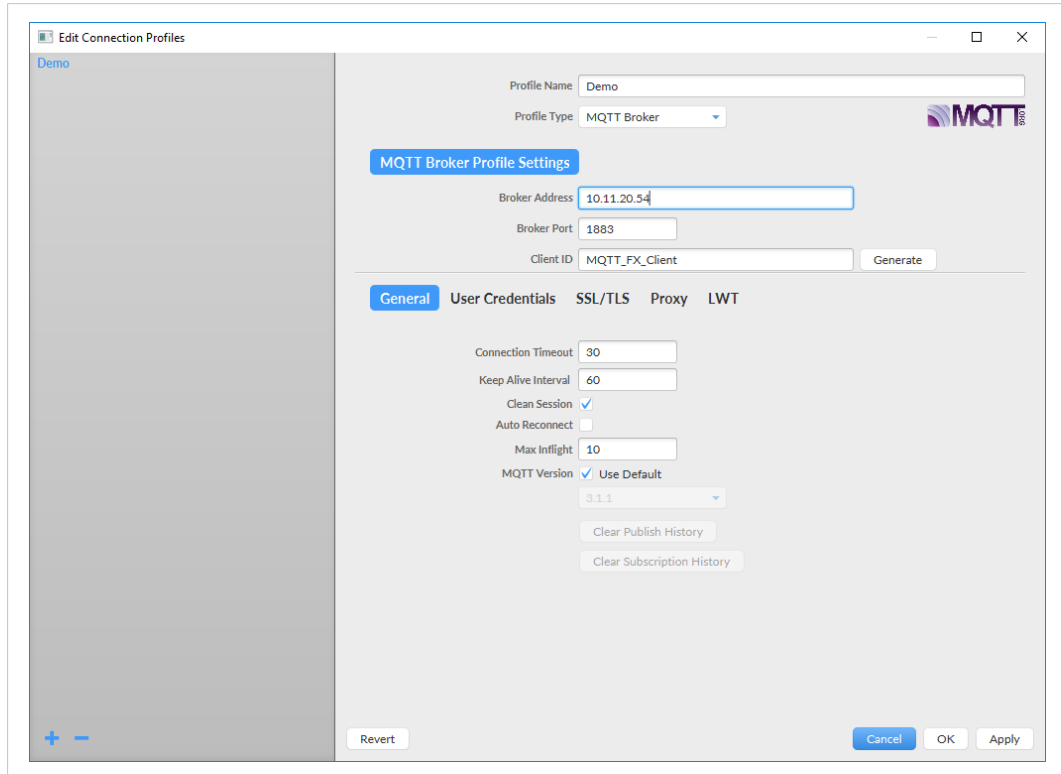


Fig. 2 MQTT.fx Connection Profiles view

Now, select the newly created connection profile at the top of the main window and press the Connect button. Once connected, it is possible to enter the Broker status tab and subscribe for status of the Mosquitto server. As the CompactCom 40 module should already be connected, the status should tell two clients are connected. At this point, if a data notification event is triggered by the host application of the CompactCom 40 module, one should see the message and traffic counters increment.

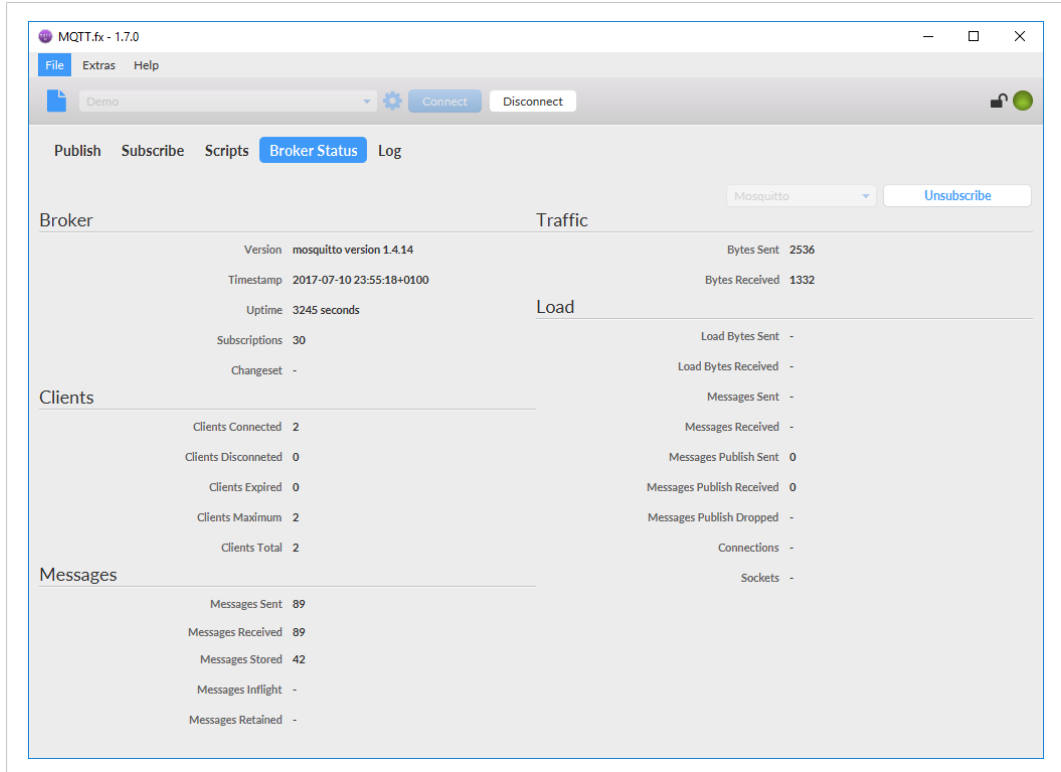


Fig. 3 MQTT.fx Broker Status tab

To receive the data notifications published by the CompactCom 40 module, a subscription must be registered to the Mosquitto server. To do this, open the Subscribe tab and enter the topic string that the CompactCom 40 module publishes data on in the text box. Then press the Subscribe button. When the application has data to publish, e.g. if data is changed or if someone pushes a button, it sends the data to the CompactCom 40 and the publish message will be forwarded by the Mosquitto server to the MQTT.fx client and show up in the console of the Subscribe tab.

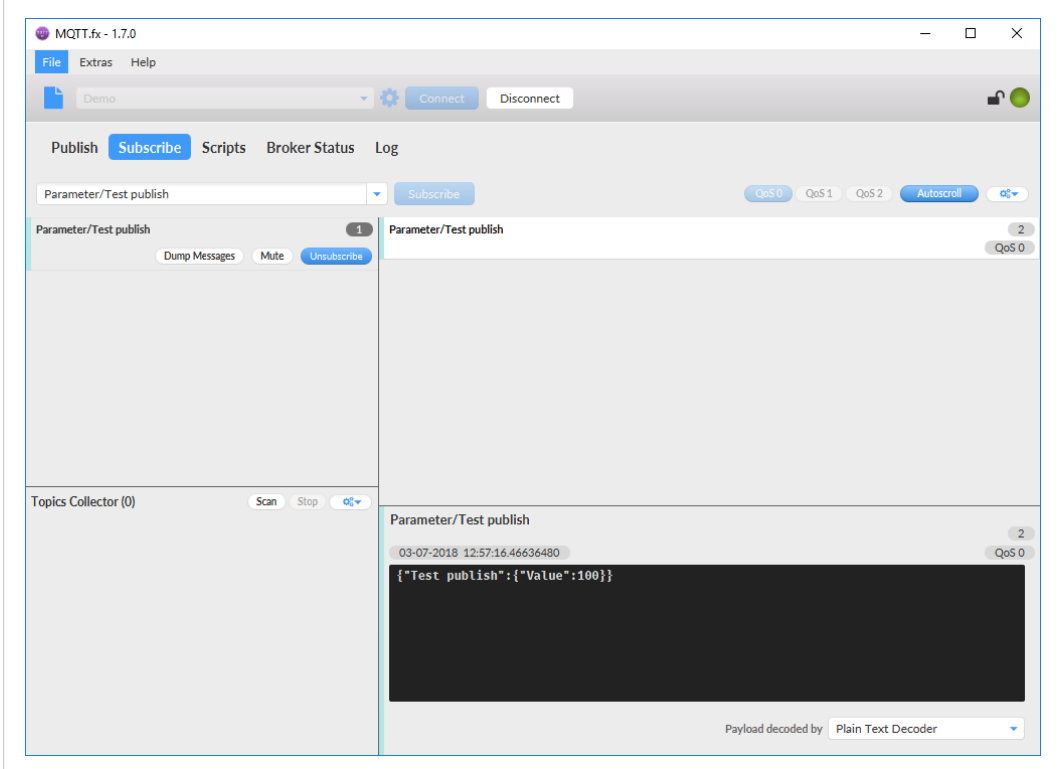


Fig. 4 Subscribing to topics with MQTT.fx

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