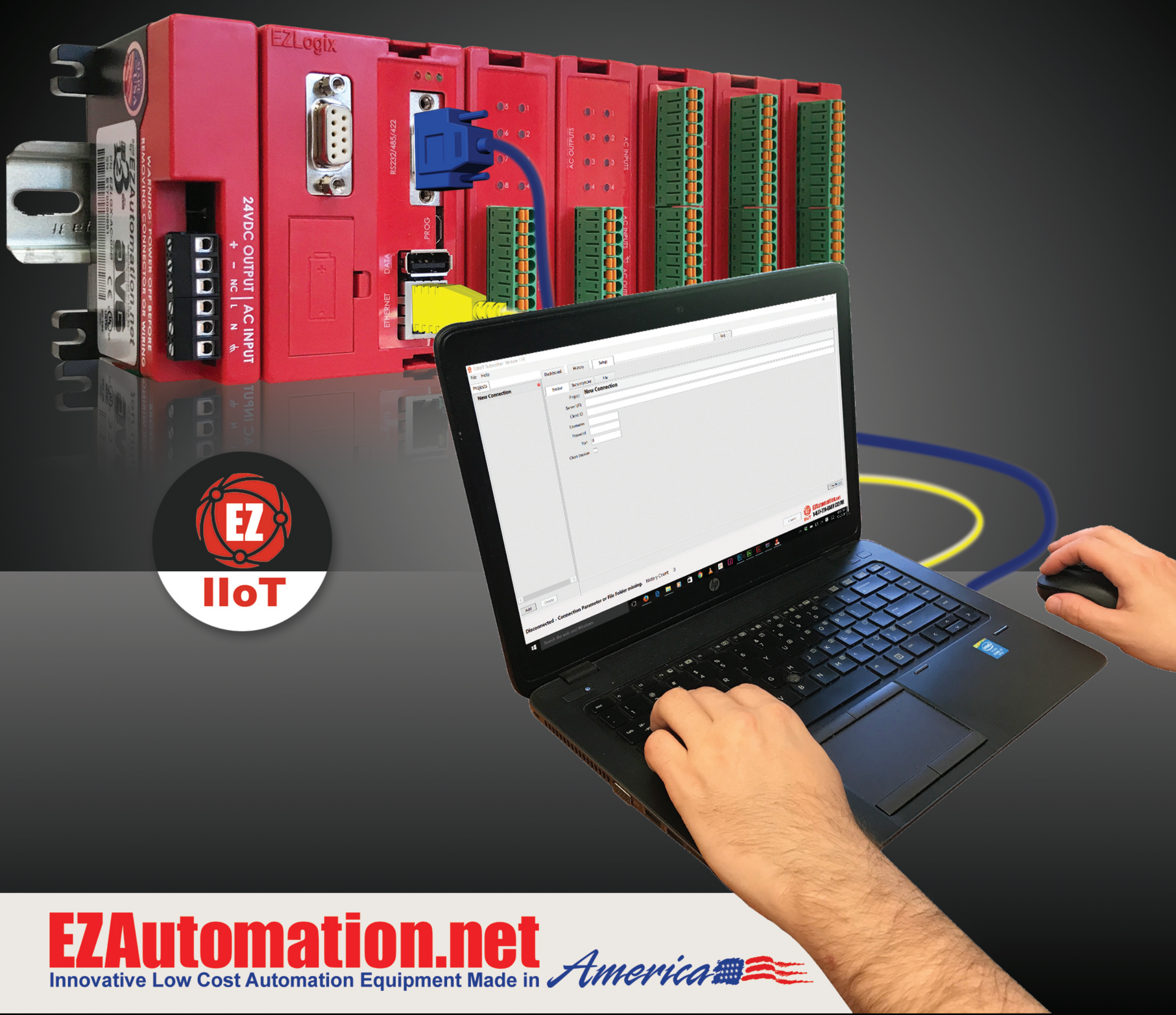
EZ Logix

IIoT Utility Manual



EZAutomation.net

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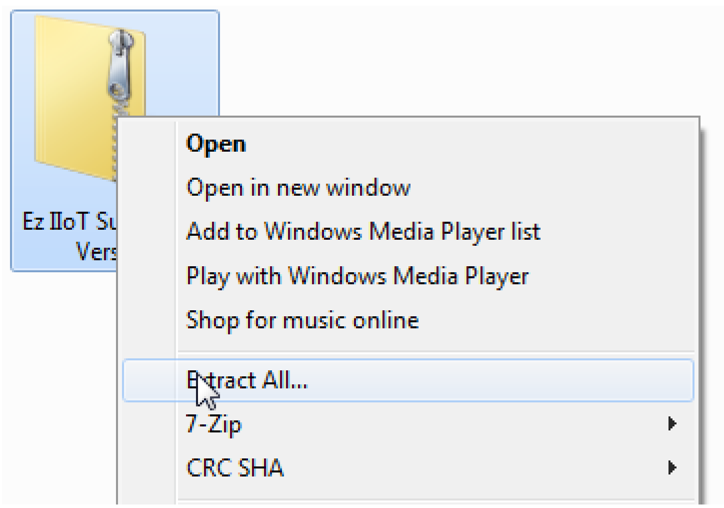
8.7 EZ-IIoT Subscriber Utility

The data EZLogix PLC publishes to the broker is accessible through any third party subscriber utility but EZ Automation has created its own take on this utility. The EZAutomation subscriber utility is developed to make it very easy to see current updated information as well as store any previously published information. This utility will data log any MQTT messages that it sees when subscribed to the broker.

8.7.1 Install EZ-IIoT Subscriber Utility

The EZ-IIoT Subscriber Utility is a separate setup which can be downloaded from www.EZAutomation.com. The EZ-IIoT Subscriber Utility can be installed on any computer that the EZLogix Designer Pro can and at least 2 MB of free space on hard drive for installation. Follow directions below to setup the utility.

1. Download the EZ-IIoT Subscriber Utility ZIP file from the website.



2. Extract the zip folder to the location where you want to place the utility.
3. The utility will now run. Please follow directions below to setup your broker connection.

Note: The EZ-IIoT Subscriber Utility requires .NET Framework 4.5 which you might need to install from the Microsoft Windows Website.

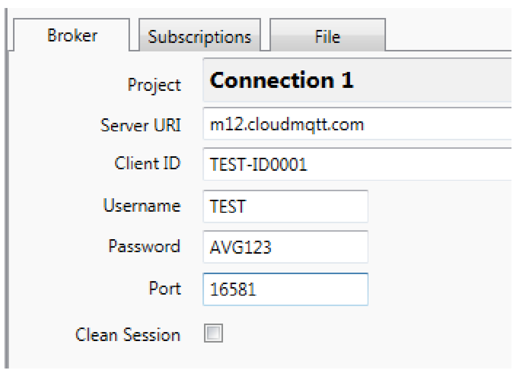
8.7.2 EZ-IIoT Subscriber Utility Setup

The EZ-IIoT Subscriber Utility is very easy to setup. The only information needed is listed in the table below. To setup the utility please follow the instructions below.

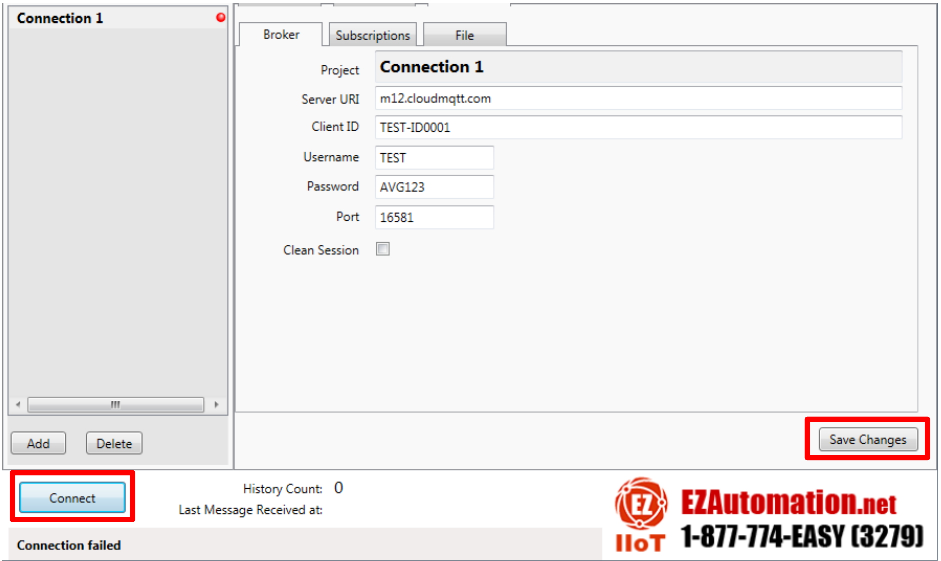
Information Type	Example Information
Domain Name (Server URI)	m12.cloudmqtt.com
Client ID	Test-ID0001
User Name	TEST
Password	AVG123
Port Number	16581

1. Open the EZ-IIoT Subscriber Utility. In the projects are click the “Add” button.

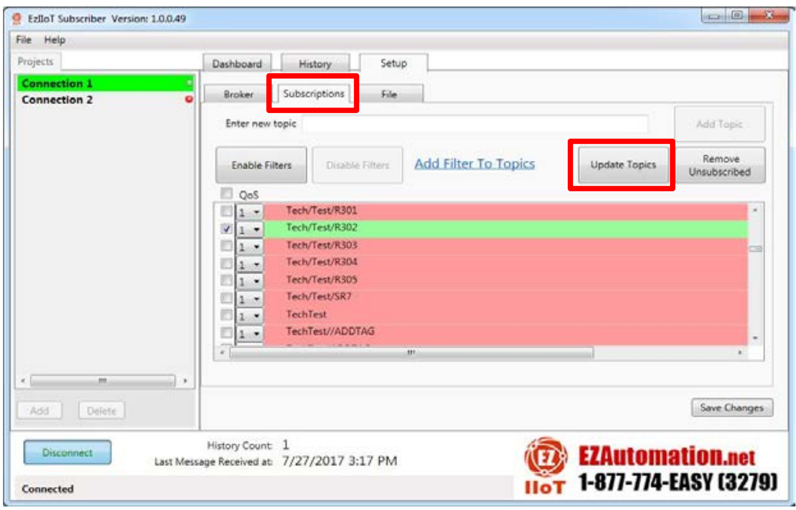
2. In the new connection enter the information from the broker. The example shown uses the example information in the table above. You can also rename the project in the Broker Setup window.



3. Click the “Save Changes”. You will now have the Connect option in the information below. Use the “Connect” button to connect to your broker.



4. As soon as you are connected the Project will turn green. Now in the Setup tab go to the Subscriptions tab. Click the Update Topics to get the topics you have access to. This will only retrieve topics that have been published with the 'Retain Flag' set to true AND have been published at least once. If this is not true you can add any topic you would like. Then select Topics you would like to subscribe to. Once select the topic is subscribed and you will now be updated in the History tab about its value. Please see the next section for the full functionality of the Utility.

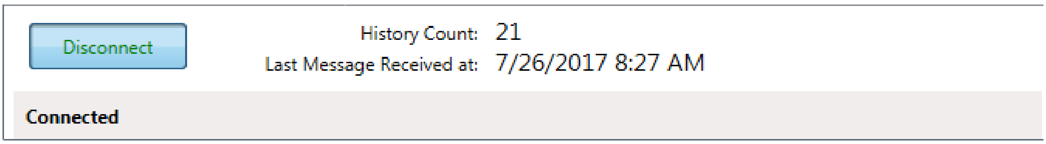


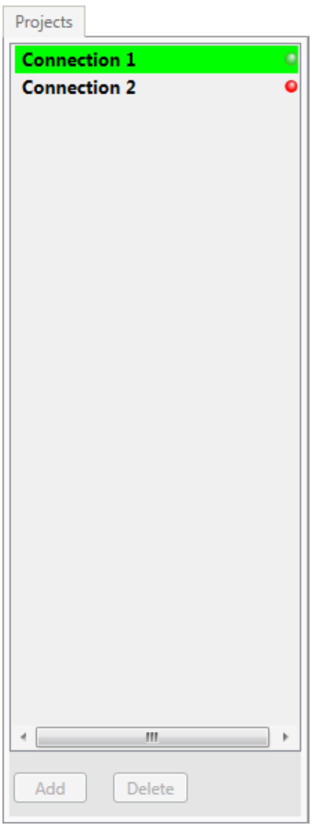
8.7.3 EZ-IIoT Subscriber Utility Functions

The EZ-IIoT Subscriber Utility has 5 tabs total for its full functionality. This section will go through the 5 tabs and list its functionality. There are 2 main tabs (Dashboard, History) and 3 setup tabs (Broker, Subscriptions, and File).

Connection Status

The connection status is visible in all tabs and allows the user to connect and disconnect from the broker. It also lists the current history count and when the last message was received. If there are any errors they will also be listed here.





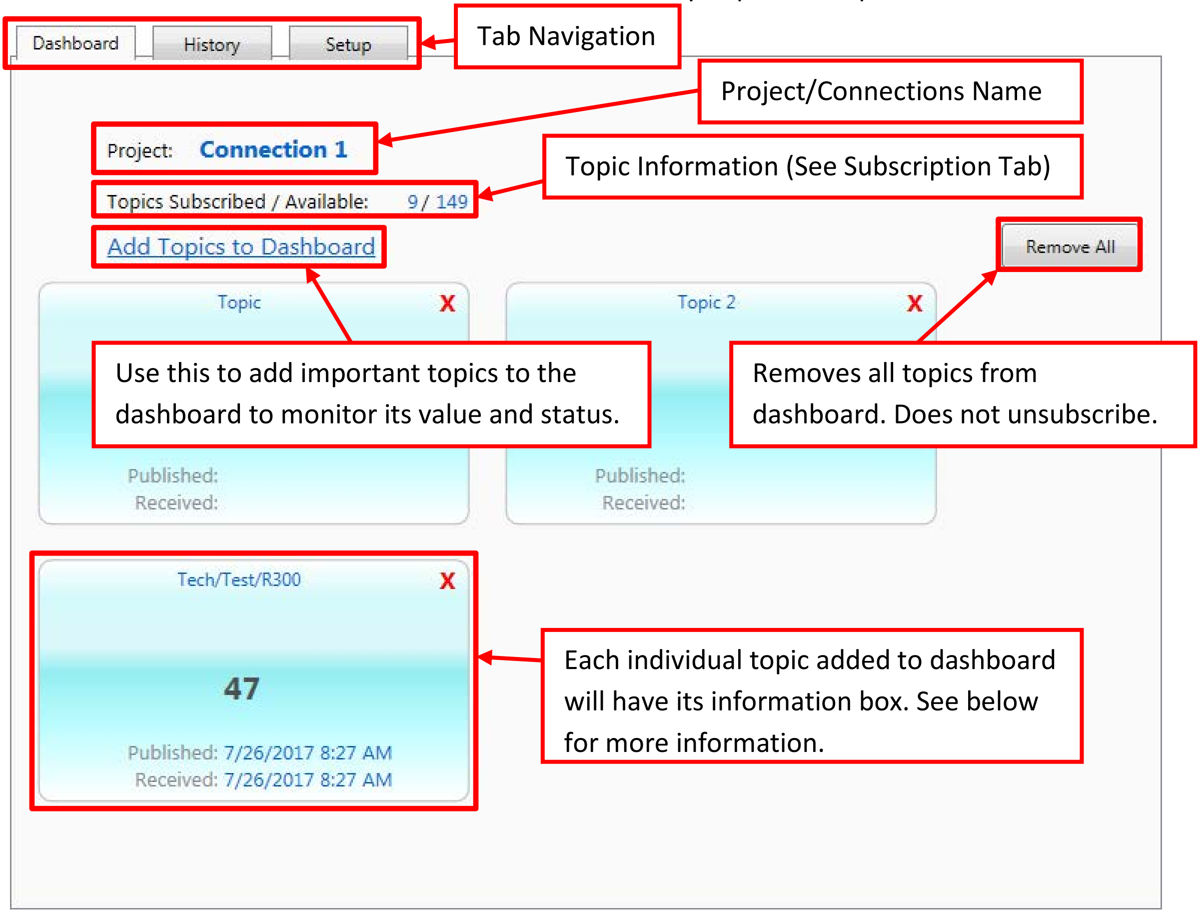
Projects List

The project list allows switching between all the different connection setups. Only one connection can be connected at a time. New connection can only be added when you are disconnected from the broker. The green light indicates which project/connection is actively connected to a broker.

Use the **Add** and **Delete** buttons to add and delete connections when not connected to broker.

Dashboard Tab

The dashboard is the main view screen for any Project / Connection. It allows the user to have an overview of this broker connection and monitor any important topics.

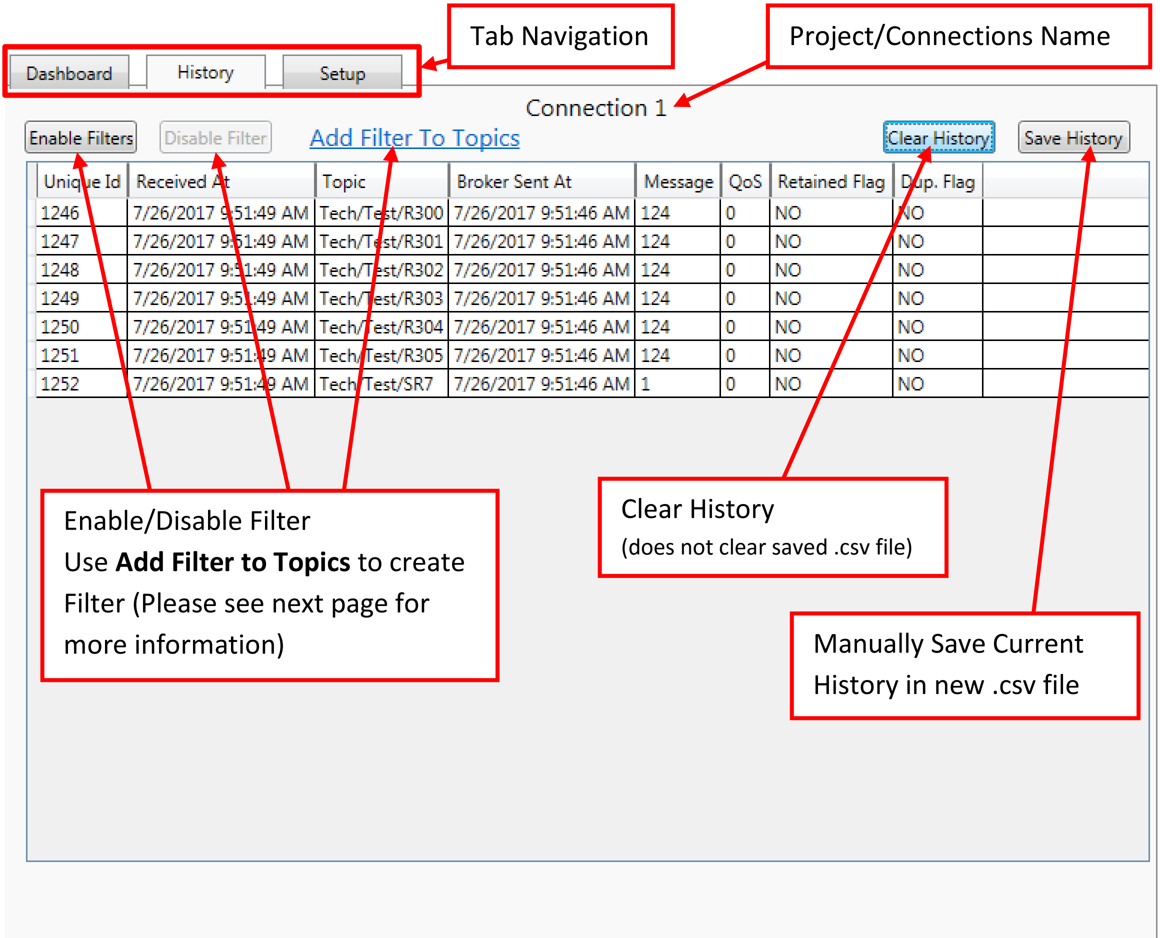


Dashboard Highlighted Topics

Any topic added to the dashboard will have a box appear where the current status / value can be monitored. This box will list the topic name at the top. The last received value is the value in the middle. Finally it will list the publish time and Utility receive time at the bottom. To eliminate this topic from the dashboard use the X or the Remove All option. Eliminating the topic from the dashboard does not unsubscribe. *Note: Each time a new message is received for this topic it will flash to indicate status change.*

History Tab

The history tab lists all the received values from all subscribed topics. Filters exist to navigate and narrow down information. Also the history can be cleared. The connection status area will list the total count of received values from all topics listed in the history tab. The history can be saved manually but it is also saved automatically (please see **Setup > File** Tab for more information).



History Information

Unique ID – Each received message will have a unique ID number per connection which can be used to reference the received message. It can be used to search in the .csv file as well.

Received At – This is the time and date that the message was received by the Utility.

Topic – The subscribed topic name.

Broker Sent At – When the publisher sent the message to the broker. Can be incorrect if publisher (EZLogix) has wrong date and time.

Message – The actual message. The utility is formatted to expect EZLogix format of messages. The EZLogix messages are formatted to include the Time Stamp of when the message was sent and then the message value. The EZLogix publish format is "TimeStamp, Value". Example below:

Received message: 1501073628, 291
The corresponding history result is:
Broker Sent At: 7/26/2017 12:53:48
Message: 291

QoS – Quality of Service from the publisher. Set on the publisher (EZLogix) side.

Retained Flag – This will tell you if it is a currently published message or if it is a retained message. The message will say "NO" for retained flag if you are subscribed while it is published. Otherwise if the message is set on the publisher side as retained you will receive the message as soon as you subscribe. Please see example below:

Event 1:

Utility:	Subscribes
Publisher:	Publish Message 1 with Retain Message set
Utility:	Message 1 received and has "NO" for retained flag

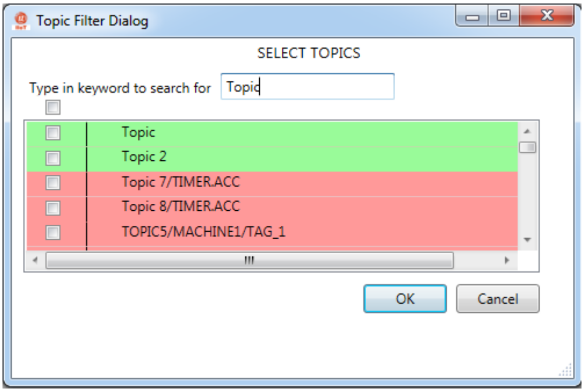
Event 2:

Publisher:	Publish Message 2 with Retain Message set
Utility:	Subscribes
Utility:	Message 2 received and has "YES" for retained flag

Note: Retain flag will not be "YES" unless the message was published before the user subscribed

Dup. Flag – The duplicate flag will be set to "YES" if the message has been received more then once by the Broker.

Topic Filter

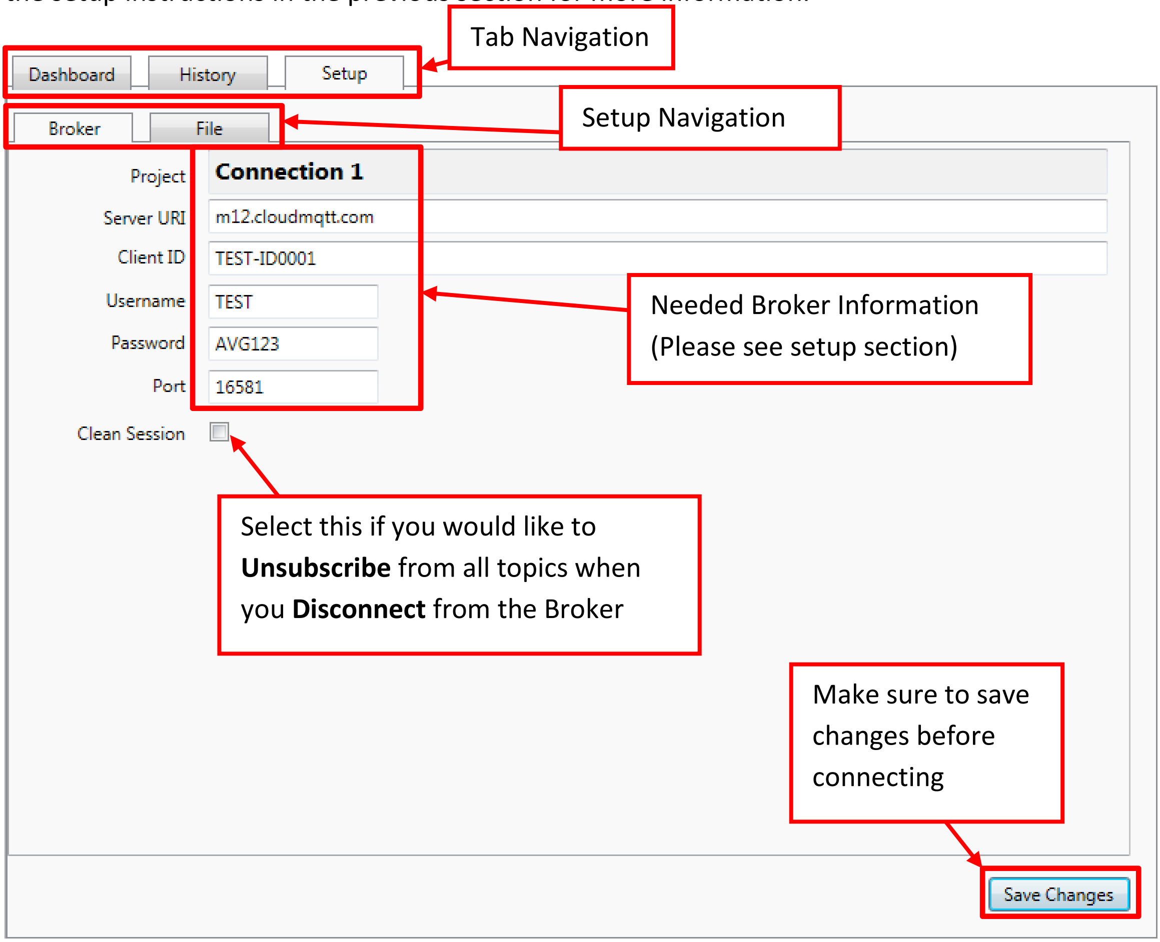


The Topic Filter can be used to filter by different topics. Use the keyword selector to search for needed topics. Then select the topics you would like to see when filter is enabled. Click "OK" to finish setting up filter.

On the main screen use enable filter to see only previously selected topics.

Setup Broker

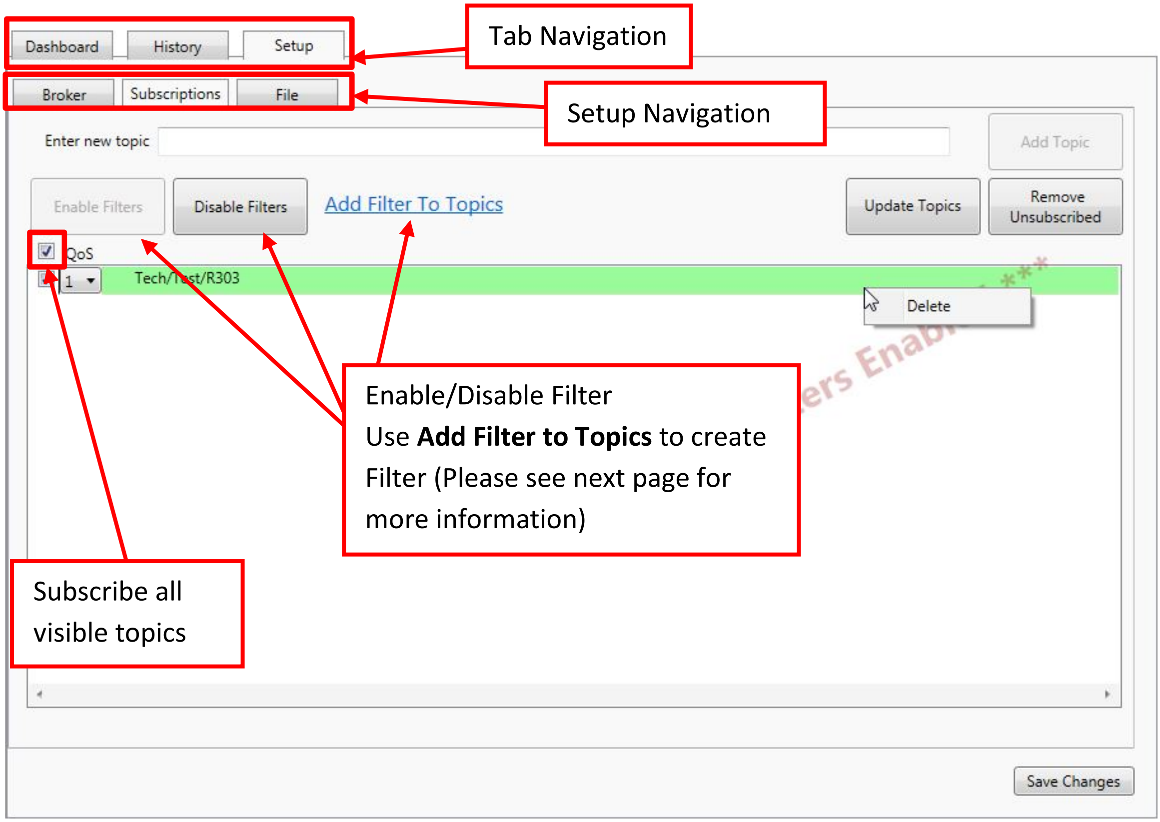
This tab is used to configure the broker information before connecting to the broker. Please see the setup instructions in the previous section for more information.



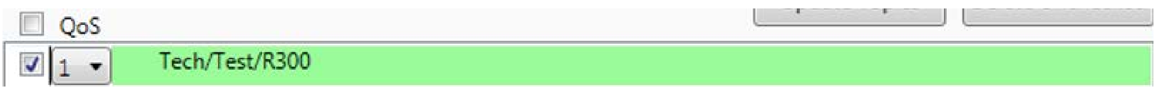
Note: You cannot connect with the new settings until you save changes.

Setup Subscriptions

This tab is used to subscribe to different topics. This tab is only available when connected to the broker. You can either add a topic or subscribe to topics that already exist on the broker. Use the filter to narrow down the topics you would like to work with.



How to Subscribe to a Topic



To subscribe just check the box next to the Topic you would like to subscribe to. You can change the Quality of Service (QoS) for communication between utility and Broker for that topic at any time by using the dropdown (QoS of 1 or 0 allowed). Also you can subscribe to all visible topics by using the check box next to QoS.

Update Topics

The update topics will download all topics that exist as retained messages on the broker. Only the topics that you have permission to see will be downloaded. You can also add any topics you would like at any time. This will only retrieve topics that have been published with the 'Retain Flag' set to true AND have been published at least once.

Remove Unsubscribed

The remove unsubscribed option will delete all unsubscribed topics currently visible in the Subscription window.

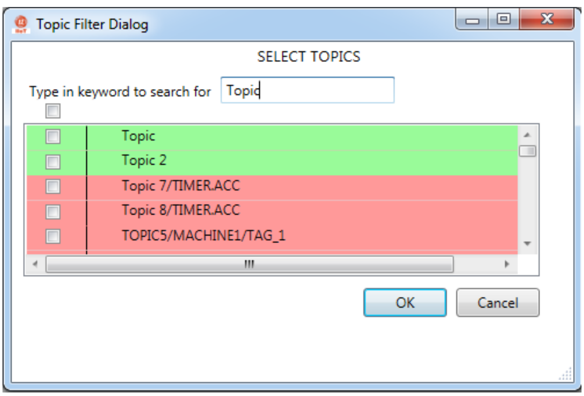
Delete

You can delete individual topics by right clicking on topic and selecting the delete option.

Add Topic

You can at any point add a topic to subscribe to by typing in the topic and pressing Add Topic. ***Note: you will need to do this for any topic which does not have a retained flag since the update topics will not populate the list with these.***

Topic Filter

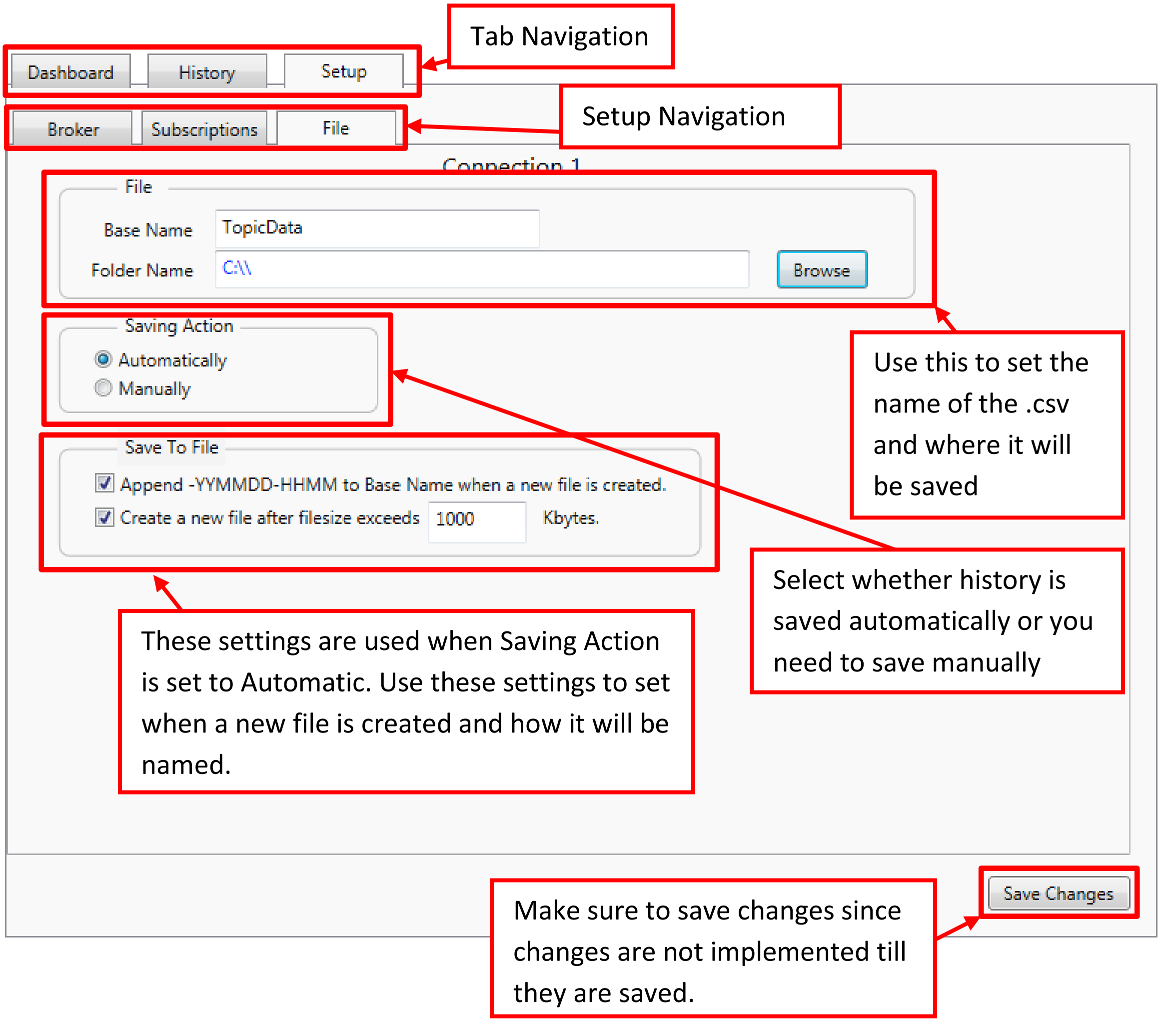


The Topic Filter can be used to filter by different topics. Use the keyword selector to search for needed topics. Then select the topics you would like to see when filter is enabled. Click “OK” to finish setting up filter.

On the main screen use enable filter to see only previously selected topics.

Setup File

This tab is used to configure how the Utility will save the messages it has received. Here you can name the save file and change the save folder. You can also configure conditions of saving and when a new file is created.



Note: The newest data will always be saved in the Base Name .csv file. If new files are created then data is either saved in files with the date and time appended. Or if that format is not used the oldest files will be in "Base Name1.csv", second oldest in "Base Name2.csv". Also if the Base Name is open in excel, write is not possible so a new file with name "Base Name_.csv will be created.

8.7.4 EZ-IIoT Subscriber Utility Best Practices

This section will mention some common best practices when using the EZ-IIoT Subscriber Utility.

Utility Use

Recommended uses of this utility (can be used for multiple purposes at same time):

- Monitor tags – This utility can be used to monitor about 4-10 tags from the dashboard.
- Data Log – When this utility is subscribed it can be used to data log tag values for later analysis. *Note: it is stored as a .csv file.*
- Check Status – This utility can also be used to just check status of machine periodically by subscribing to see current status.
- Troubleshoot – This utility can also be used to see tag values for off-site troubleshooting capability.

CSV Files

When looking at saved history (data logging) in the CSV files the best way to view is to create a copy and then view in excel. If the CSV is open in excel the utility can write to it and will create a new file. Also note the oldest data will have a unique ID of 0 and the newest will have the highest value unique ID.

Client ID

Please make sure to use different Client IDs for each subscriber. If the same client ID is used for multiple subscribers only 1 will ever be able to connect to the Broker at a time. If the client IDs are different all subscribers up to your broker limit can connect to the Broker at the same time.

Username and Password

Each username and password can be limited to only certain topics thereby allowing users specific access to needed information. Therefore it is best to create a different username and password for each user. A username and password can be used in multiple locations to connect at the same time but it is not recommended.

EZ-IIoT Subscriber Utility Acceptable Data Format

The EZLogix publish format is “TimeStamp, Value”. The EZ-IIoT Subscriber Utility expects data in this format. Example below:

Received message: 1501073628, 291

The corresponding history result is:

Broker Sent At: 7/26/2017 12:53:48

Message: 291