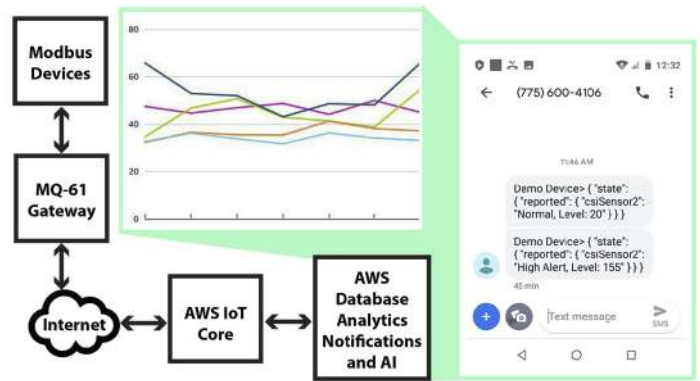
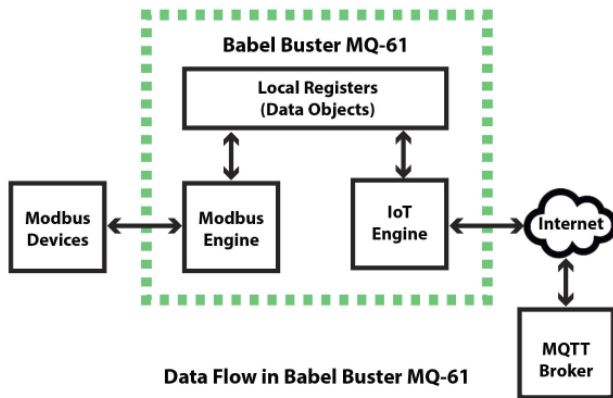




**Control Solutions' Babel Buster<sup>®</sup> MQ-61 IoT Gateway** turns any Modbus device into a Thing on the Internet of Things. The MQ-61 will poll one or more Modbus RTU and/or Modbus TCP devices, collecting data from the list of registers you provide. Based on rules you create, the MQ-61 will decide if and when to publish that data to the MQTT broker (server). You can also configure the MQ-61 to subscribe to data coming from the MQTT broker, which you can then write out to Modbus devices to manage setpoints and the like.



One of the many things you can do with data that has been published to the AWS server by the Babel Buster MQ-61 is analyze and visualize the data, and generate text messages automatically sent to your smart phone. The graph and message illustrated above represent data published by an MQ-61, and the steps taken to get this graph or notification are outlined in the user guide.



The MQTT “publish” action, in controls terms, is most closely associated with sensors. Your hardware has collected sensor data, and you want to send that sensor data to a server or to other control devices. To send that data, you “publish” it.

The MQTT “subscribe” action, in controls terms, is most closely associated with actuators. The “subscribe” action would also be associated with control setpoints. You can never force data into a device via MQTT. The device, in our case the MQ-61, must subscribe to the source of data effectively asking to be informed of changes. Once you have subscribed to an MQTT source of data, then when received, you can use that data to control actuators or update setpoints.

The MQ-61 IoT Gateway is capable of more than just transferring data between Modbus devices and the MQTT brokers. It includes Script Basic built in to provide easy-to-use local programming for data analysis and local decision making. This capability is referred to as Edge Computing in IoT terminology.

The MQ-61 supports the open source industry standard Mosquitto MQTT broker. The MQ-61 includes additional features to support Amazon's AWS IoT Core as well as ThingsBoard.



The MQ-61 also supports interactive dashboards using ThingsBoard. The MQ-61 includes features specific to ThingsBoard that allow MQTT interaction with graphic widgets on the dashboard. Modbus data published by the MQ-61 can show up as real-time gauge indications or charts. Input from the dashboard such as knob adjustments or switch changes will be immediately reported to the MQ-61 and those changes are immediately accessible as Modbus data.

### Convert Proprietary Serial Protocols

The MQ-61 allows the serial port to be used for a proprietary serial protocol instead of Modbus RTU. This effectively makes it a proprietary protocol to MQTT converter. When used for interpreting a proprietary protocol, a Script Basic program would be written to send and receive via the serial port as applicable, and interact with the local Modbus registers under user program control.

The ability to be programmed to interpret proprietary serial protocols means you can also give your proprietary device access to scheduling, alarm monitoring, and email notifications. Once your Script Basic program interprets your serial data stream and writes data values to local registers, all of the features available to Modbus are available to your serial device.



## MQ-61 Stand-Alone Remote Monitoring

The MQ-61 includes a secure local email client that will directly email you notifications of alarm events. The event rule template has all of the same power and flexibility as the MQTT publish template. The email message template lets you fully customize the message that is sent. The template includes variables which insert real time data from the MQ-61 as the email is sent.

The MQ-61 includes local data logging capability that can be used instead of sending data to the cloud. You select which data points are logged to a local CSV file. This file is then emailed to you periodically. You select logging rate and when files should be sent. You also have the option of logging at a slower rate most of the time, but then log faster when an event of interest is in progress.

Local Register#	Header Label/Register Name	Include in CSV File
1	Data Value 1	<input checked="" type="checkbox"/>
3	Data Value 2	<input checked="" type="checkbox"/>
5	Data Value 3	<input type="checkbox"/>
7		
9	Timestamp	
11	Data Value 1	
13	Data Value 2	
15	Data Value 3	
17	Data Value 4	
19	Data Value 5	
21	Data Value 6	
23	Data Value 7	

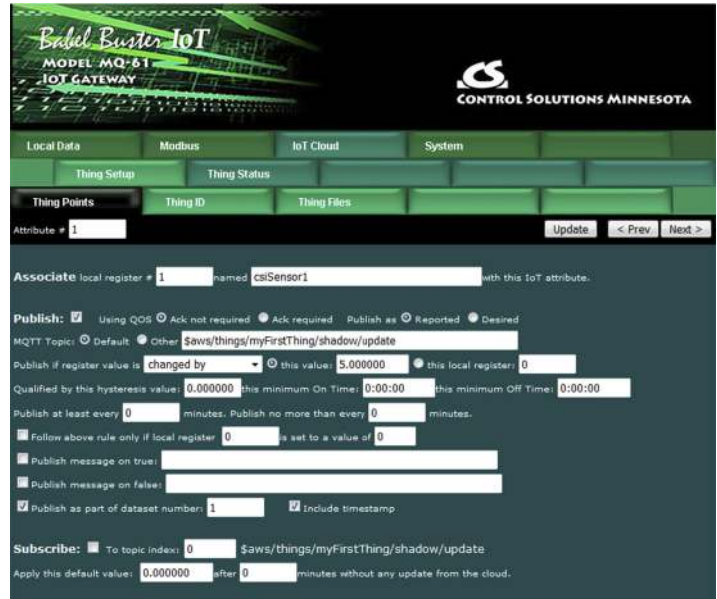
  

	A	B	C	D	E
1	Timestamp	Data Value 1	Data Value 2	Data Value 5	Data Value 6
2	2021-09-21T16:01:41-05:00	8052	6913	-1562	5472
3	2021-09-21T16:01:59-05:00	7958	6819	-1658	5448
4	2021-09-21T16:02:59-05:00	8023	6859	-1641	5538
5	2021-09-21T16:03:59-05:00	8119	6952	-1545	5591
6	2021-09-21T16:04:59-05:00	8158	7002	-1445	5668
7	2021-09-21T16:05:59-05:00	8183	7041	-1418	5669
8	2021-09-21T16:06:59-05:00	8196	7125	-1370	5689

The MQ-61 includes a real time scheduler for scheduling daily events or one time events on a given date and time. The scheduler also includes exceptions for holidays.

## FEATURES

- MQTT Client supports AWS IoT Core, Mosquitto MQTT, ThingsBoard
- Simple template based setup of MQTT Publish and Subscribe
- Secure local email client for local alarm notifications
- Local data logging for remote monitoring without any cloud
- Real time event scheduler
- Modbus RTU RS-485 Master or Slave
- Modbus TCP Client and Server
- Modbus TCP over Ethernet 10/100BaseT
- Up to 2000 local registers, up to 100 points mapped to IoT
- 16, 32, 64-bit integer, 32 or 64-bit IEEE 754 floating point, Mod10
- ASCII character string support (UTF-8)
- Supports Modbus "coils", input registers, holding registers
- Modbus register mapping configured via web interface
- Modbus (master) polling interval configurable per point
- Configure via web pages, HTTP and/or HTTPS
- Flash file system for XML configuration files, SSL certificates
- Online help, Quick Help section at bottom of every web page
- Password protection for web log-on and ftp
- Field upgradeable firmware upload via ftp
- DHCP or static IP address, IPv4 and IPv6 support
- Hardened EIA-485 transceiver for Modbus RTU
- Powered by 10-30VDC or 24VAC 50/60 Hz
- Power Consumption: 0.1A @ 24VDC
- Panel mount, 70mm H x 131mm W x 38mm D
- Pluggable screw terminal block for power & RTU network
- Operating temperature -20°C to +75°C; Humidity 5% to 90%
- FCC Class A, CE Mark



The MQTT publish and subscribe "rules" are created with an easy to use template. A diagnostic page is also provided where you may view the most recently published data, and publish arbitrary JSON formatted data for testing purposes.

Configuration of the gateway is done via the secure web pages served by the internal web server. You simply fill in templates. The entire configuration is saved in the internal Flash file system in XML format. This file may be exported to replicate additional copies of the configured device, or for backup.



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