

Azures' IOT Central - Data Collection & Controls

NOTICE

This application note is provided for use as a general example and a guide. Divebiss assumes no responsibility, liability or warranty regarding this application, its use, functionality or reliability to meet application needs. User assumes all responsibility to ensure all safety precautions are taken when using this application note. This application must not be used alone in applications which would be hazardous to personnel in the event of a failure. Precautions must be taken by the user to provide mechanical and/or electrical safeguards external to this application and controllers shown.

Application Description

VersaCloud M2M+IoT, AN-123 demonstrates connecting the Versatile base VB-2000 to an IoT Central Application on Microsoft's Azure. After connection, two variables will be published to the server and one variable received from IoT Central. The Received variable is converted from a string in the Structured text portion of the Ladder diagram. A Link is provided with a pre configured Dashboard and Device template to get started right out of the Box.

Equipment Used

VB-2000 Controller	
Controller Part #:	VB-2000
Programming Software:	EZ LADDER Toolkit, V1.2.4.11 or later
Other	Azure Account and IoT application Template
Application Filename:	AN123.dld
Programming Cable:	SI-PGM

Other controllers including the HEC-P2000, P5000, and P6000 Series, P-Series Bear Bones, and other P-Series PLC on a Chip/Modules may also be used with this Application note.

To download the Template, copy this link into your Windows Browser : <https://apps.azureiotcentral.com/build/new/22007f60-b8f2-4104-ba05-07df5b75d126>

Variable List:

- mqttConnected:** Variable tied to the output of the Connection block. It is true when the connection to the server is successful. Used as a condition to publish data.
- reset:** Used to reset the Counter function block.
- txMqttData:** Attached to the Q output of a One shot timer function. Used to publish data on timed interval. This Boolean Flag is true for only one scan.
- connErr:** Variable used to store the error code from the MQTT connect function. It is a valid code for only one scan.
- Err:** Holds the error code for the Publish function block.
- Load:** Variable to represent data derived from a sensor or other logic.
- numRetries:** The Current number of retries the block has attempted. The number resets when the EN toggles state.
- Spd:** Variable for Speed to represent data derived from a sensor or other logic.
- Status:** Holds the Status code of the MQTT Function block.
- Payload:** The value of the last received message from IoT Central.
- MqttTxTmr:** The time base for One-Shot timer to publish data.
- mqttTxElap:** Holds the elapsed time of the One-shot timer.

EZ Mqtt Publish Properties

Block Name:

Block Description:

Topic:

LD Variable Name	Type	JSON Name
load	INTEGER	<input type="text" value="engine_load"/>
spd	INTEGER	<input type="text" value="engine_speed"/>

Rungs 1-3:

The MQTT Connection block is enabled by the normally closed enMqttConn contact. Variable Outputs of the block are valid for one scan. The Q output becomes true when the Connection is successful. If enabled, the Block will attempt to retry a lost connection. The Notes listed in the ladder diagram are the expected values for the status and the error codes.

Rung 8-10:

If the Connection is successful, the Q output variable, txMqttData, will become true. This will enable the one shot Timer to repeat a transmit flag once every minute .

Rungs 12-16:

The MQTT Publish Block lists all the Variables that are to be published to lot central. The ladder variables names do not have to be the same as the JSON names. The JSON name and type will need to match the one on lot central.

Rungs 18-20:

The MQTT receive function block outputs the Value of a variables coming from lot central. The value is received in the structured text and output into the Ladder Variable called *Payload*.

Getting Started:

After downloading the accompanying EZ ladder program, AN123.dld, Copy this URL into your window browser: <https://apps.azureiotcentral.com/build/new/22007f60-b8f2-4104-ba05-07df5b75d126> . You will be prompted to sign up for a FREE account.

This short video will walk you through setting up your devices with the unique device ID assigned to your device. <https://www.youtube.com/watch?v=3alcHGnHtV4&feature=youtu.be>