



WebdynEasy W M-Bus

MQTT Application Note

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Introduction

This application note describes how to configure and set up the WebdynEasy WM-Bus product to run in MQTT mode.

In this specific mode, the usual product philosophy using a listening window and periodic file sending is no longer applicable.

MQTT mode runs as follows:

Radio listening is permanent and each received frame is immediately sent to the MQTT broker. This operating mode implies that the modem is permanently operational.

Continuous radio listening and the permanent connection to the server generates very high energy consumption. It is therefore strongly recommended to use an external power source rather than the battery.

This operating mode can be used for "walk-by" meter readings for example.

Operation

When the magnet action is set to "continuous" (code 3) and an MQTT server is configured, the product can start up in MQTT mode. In MQTT mode, the received WM-Bus frames are directly posted to the MQTT broker. The frames are published in BSON format on the broker. It is always possible and useful to keep the FTP connection setting, as its access can be used to update the configuration and firmware, which is not possible using MQTT.

When switching to Run mode, the WebdynEasy will first check for available configuration or command files in the FTP server INBOX directory. The concentrator will regularly check the FTP server INBOX directory according to the FTP scheduler configuration.

There are two cases to consider when using MQTT mode:

- Case 1: Using an external power supply and a monitoring period of less than 14 minutes: When the WebdynEasy is switched to RUN mode, it starts directly in MQTT continuous mode. A single pass of the magnet indicates MQTT mode by a long beep. A second pass of the magnet within the next 10 seconds will stop MQTT continuous mode and will be indicated by 3 short beeps.

During MQTT operation if:

- The external power supply is cut
- Communication with the MQTT broker is lost (10 attempts are planned)
- or 2 passes of the magnet are made in less than 10s

Then, radio listening will be interrupted in favour of the classic product operation (listening windows + FTP connection) until the next monitoring task controlled by the "monitoring period" parameter is triggered. The value of this parameter must be between 1 and 14 minutes maximum.

If the fault has disappeared at that time, the concentrator will resume MQTT continuous mode.

The external power supply cut situation also occurs if the "monitoringPeriod" is greater than 14 minutes.

- Case 2: Without an external power supply or with an external power supply and a monitoring period longer than 14 minutes:
When the product is in Run or Storage mode, a double pass of the magnet causes continuous mode to be activated or stopped depending on the initial state.

MQTT continuous mode can only be triggered manually. The first pass of the magnet gives the concentrator status and the second will activate MQTT mode. MQTT mode remains active until there are two successive passes of the magnet.

Configuration

To activate MQTT continuous mode, the "/local/magnet" parameter must be changed to "3". This code is called "continuous" in the PC configuration software

All the concentrator's MQTT/MQTTS variables are contained in the "remote/mqtt" object:

Name + tree structure	Description	Type	Default value
/remote/mqtt/addr	IP address or remote MQTT server name The MQTT port can be changed by adding ":" then the port number (between 1 and 65535). By default if "remotemqtt/mode" = 0 the port number used is 1883 otherwise it is 8883.	Text (100 characters max)	null
/remote/mqtt/mode	MQTT protocol security level selection	List: <ul style="list-style-type: none"> 0: MQTT 1: MQTTS (MQTT over TLS) 2: MQTTS (MQTT over TLS) + certificate 	0
/remote/mqtt/user	User name to access the MQTT server	Text (64 characters max)	null
/remote/mqtt/pass	MQTT server access password	Text (64 characters max)	null
/remotemqtt/topic	Topic name for the sent data	Text (64 characters max)	null
/remote/mqtt/qos	Guaranteed service number for message sending (Quality Of Service). The possible values are: <ul style="list-style-type: none"> 0: the message will only be sent once, i.e. with no guaranteed receipt. 1: the message will be sent at least once, i.e. the concentrator will send several times if necessary until the broker confirms that it has been sent 2: The message will be always be saved by the concentrator and will continue to be sent as long as the broker does not confirm it has been sent. (avoids message duplication) 	List: <ul style="list-style-type: none"> 0: at most once 1: at least once 2: exactly once 	0
/remote/mqtt/retain	Message retention activation.	Boolean:	false

		<ul style="list-style-type: none"> • true: retention activation false: retention deactivation 	
/remote/mqtt/tls/cacert	Certification authority root certificate	Text (128 characters max)	null
/remote/mqtt/tls/clientcert	Local client signed certificate	Text (128 characters max)	null
/remote/mqtt/tls/clientkey	Local client private key	Text (128 characters max)	null
/remote/mqtt/keepAlivePeriod	"Keep alive" period	Integer (min 0 max 3600): seconds	120

Example of a JSON file (to be converted to BSON format to send to the concentrator):

```
{
  "config":
  {
    "monitoringPeriod": 2,
    "local":
    {
      "magnet": 3,
    },
    "remote":
    {
      "mqtt":
      {
        "addr": "mqtt.webdyn.com:1884",
        "mode": 0,
        "topic": "webdyneasy/data",
        "user": "webdyn",
        "pass": "password",
        "qos": 0,
        "retain": false,
      }
    }
  },
  "crc": 0
}
```