MQTT demo base instructions for external developers

(Updated 07.04.2022)

Aranet PRO MQTT publisher connection properties

- Host address
- Port
- Protocol version [MQTT v3.1.1 | MQTT v5]
- Authentication [enabled | disabled]
  - Username
  - Password
- Encryption [None | TLSv1.1 | TLSv1.2 | TLSv1.3]
  - Host CA certificate
- QoS level
- Root topic
- Sensor measurement format [raw| JSON]

Aranet PRO MQTT publisher topic structure

RAW format

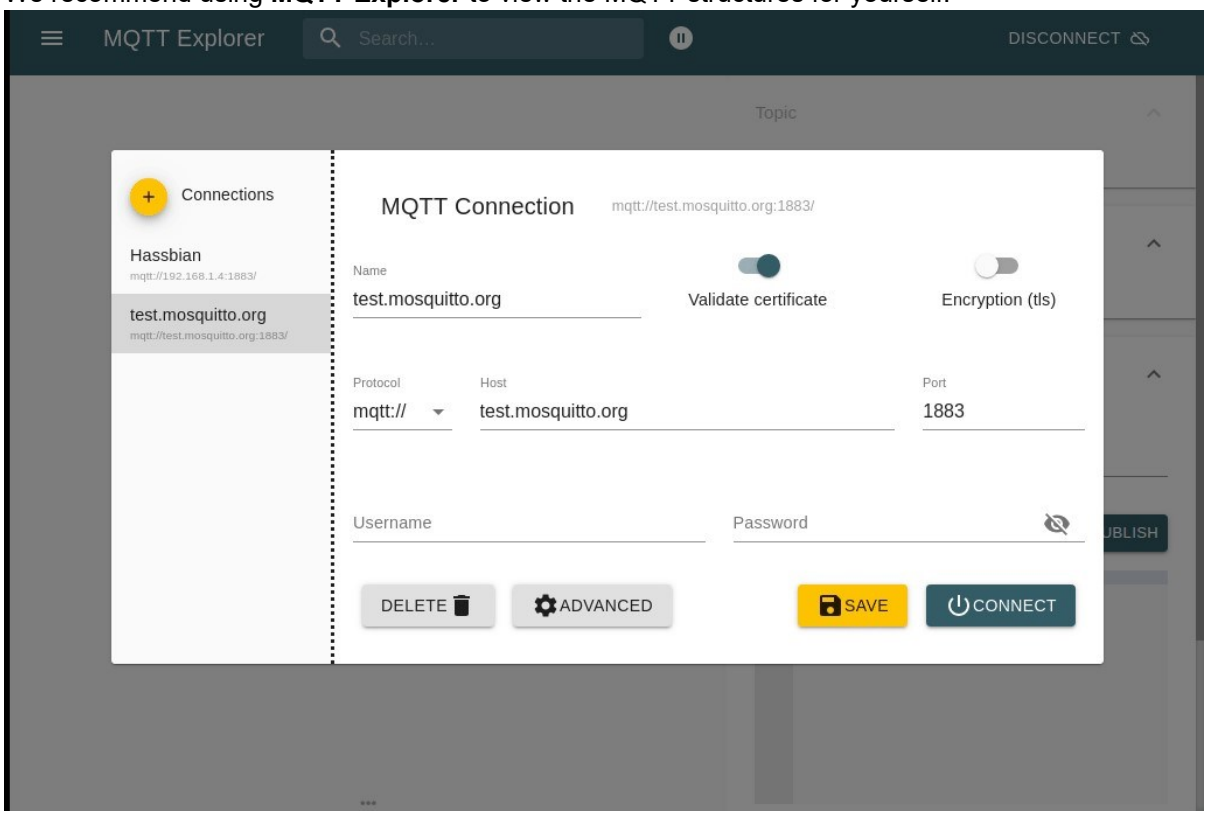
- <rootTopic>
  - <base serial number>
    - sensors
      - <sensorID>
        - alarms
          - battery
            - activesince
          - channel
            - activesince
          - errorflags
            - activesince
          - packetslost
            - activesince [retain = true]
          - <measurement>
            - activesince
            - diff
            - value
        - measurements
          - <measurement>
            - units
          - battery
            - units
          - rssi
            - units
          - time
        - name [retain = true]
        - productNumber [retain = true]
        - group [retain = true]
        - groupId [retain = true]
      - pairing [sensor management functionality enabled]
        - status
        - errorMessage
    - name [retain = true]

JSON format

- <rootTopic>
  - <base serial number>
    - sensors
      - <sensorID>
        - alarms
          - json [retain = true if packetslost alarm is active]
        - measurements
          - json
        - name [retain = true]
        - productNumber [retain = true]
        - group [retain = true]
        - groupId [retain = true]
      - pairing [sensor management functionality enabled]
        - status
        - errorMessage
    - name [retain = true]

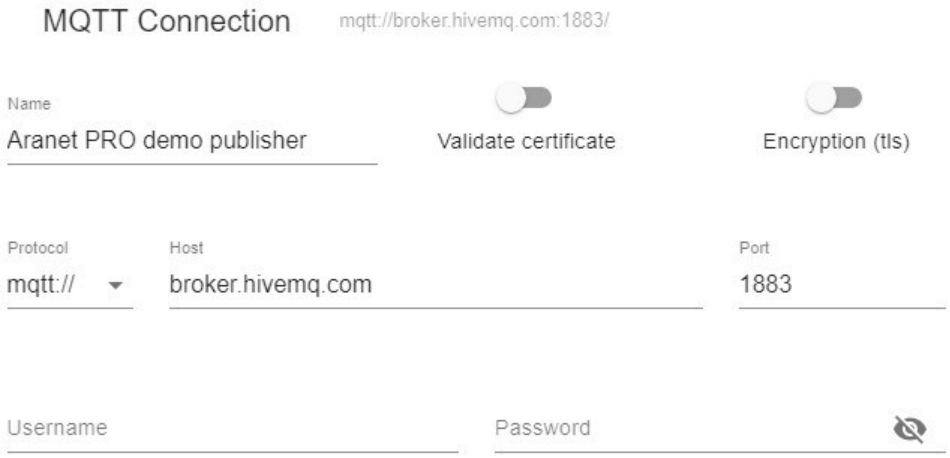
Subscription to the public Aranet PRO MQTT publisher messages for the demo purposes

We recommend using **MQTT Explorer** to view the MQTT structures for yourself.



Connect to the public broker (broker.hivemq.com)

- Host address: broker.hivemq.com
- Port: 1883
- Protocol version: MQTT v3.1.1
- Authentication: disabled
- Encryption: None



Subscribe to the messages published by Aranet PRO MQTT demo publisher

Root topic: Aranetest

Subscription topic: Aranetest/394260700033/#

Sensor measurement message formats

Two types of sensor measurement formats are available for subscriber to receive - raw and JSON.

Differences between the sensor measurement formats ("raw" un "JSON")	
"raw"	"JSON"
Sensor measurements MQTT message topic structure	
`<RootTopic>/<SerialNumber>/sensors/<SensorID>/measurements/<measurement>`	`<RootTopic>/<SerialNumber>/sensors/<SensorID>/json/measurements`
▼ broker.hivemq.com ▼ Aranet ▼ 394261000688 ▼ sensors ▼ 100118 name = IT pie tāfeles ▼ measurements ▼ humidity = 54.0 units = % ▼ temperature = 23.800 units = C ▼ rssi = -97 units = dBm time = 1596012990 ▼ battery = 0.02 units = /	▼ broker.hivemq.com ▼ Aranet ▼ 394261000688 ▼ sensors ▼ 100118 name = IT pie tāfeles ▼ json measurements = {"humidity":53.0, "temperature":23.800, "rssi":-94, "time":1596013652, "battery":0.02}
Examples of MQTT subscription topics for measurement data reception	
Example 1) - receive sensor measurements from all the bases if <RootTopic> consists of a single level topic	
`+/+/sensors/+/measurements/+`	`+/+/sensors/+/json/measurements`
Example 2) - receive all the sensor measurements from the base with S/N 394261000688 if <RootTopic> is set to "Aranet"	
`Aranet/394261000688/sensors/+/measurements/+`	`Aranet/394261000688/sensors/+/json/measurements`

Example 3) - receive measurements from the sensor with ID 100118 paired to the base with S/N 394261000688 if <RootTopic> is set to two-level topic "Riga/Warehouse"

```
Riga/Warehouse
/394261000688
/sensors/100118
/measurements/+
```

```
Riga/Warehouse/394261000688
/sensors/100118/json
/measurements
```

Sensor measurements and units grouped by sensor product code (P/C)

P/N	measurement	unit
TDSPTT01 TDSPT801 TDSPT009 TDSPT309 TDSPT409 TDSPT509 TDSPT802 TDSPTT02	humidity	%
	temperature	C
TDSPSD02 (Stem)	voltage	V
TDSPSD01 (Stem)	derived	<user-defined>
TDSPTE06 TDSPT006 TDSPT106 TDSPT206 TDSPT306 TDSPT_06 TDSPT506 TDSPT002 TDSPT204 TDSPTK01	temperature	C
TDSPHE01 TDSPHE02	temperature	C
	bec	S/m
	pec	S/m
	dp	unitless
	vwc	fraction 0.0 - 1.0

P/N	measurement	unit
TDSPSV01.050 TDSPSV01.100 TDSPSV02	weight	kg
	weight_raw	kg
TDSPCL01.010 TDSPCL02	current	A
	derived	<user-defined>
TDSPVM01.010 TDSPVM02	voltage	V
	derived	<user-defined>
TDSPIC01.010 TDSPIC02	pulses	count
	pulsescumulative	count
	derived_cpp	<user-defined>
	derived_cpc	<user-defined>
TDSPDM01 TDSPDM02	distance	m
	derived	<user-defined>
TDSKAR01 TDSKAR02 TDSPPA02	ppfd	umol/(m^2 s)
TDSPC001 TDSPC004	co2	ppm
TDSPSM02	vwc	fraction 0.0 - 1.0
TDSPAC01 (AC Hour) TDSPDC01 (DC Hour) TDSPHM01 (Dry Contact Hour)	motorseconds	s
	motorsecondscumulative	s
TDSPDP01	differentialpressure	Pa
TDSKLM01	illuminance	lx
TDSPG301	O_2	ppm
	temperature	C

P/N	measurement	unit
TDSPG101	NH_3	ppm
	temperature	C
TDSPG201	NO_2	ppm
	temperature	C
TDSPG001	CO	ppm
	temperature	C

Alarming

Name	Description	Repetitive	Retain
battery	Sensor's battery charge level is low.	yes	no
channel	Sensor is using a different radio channel than the base station.	yes	no
errorflags	Sensor malfunction detected.	yes	no
packetslost	Measurement form the sensor was not received in the estimated time.	no	yes
<measurement>	Alarm related to sensor measurement value. Generated in case if value has reached a threshold.	yes	no