CEBORA MQTT

Instruction manual

Main Index

1 Introduction

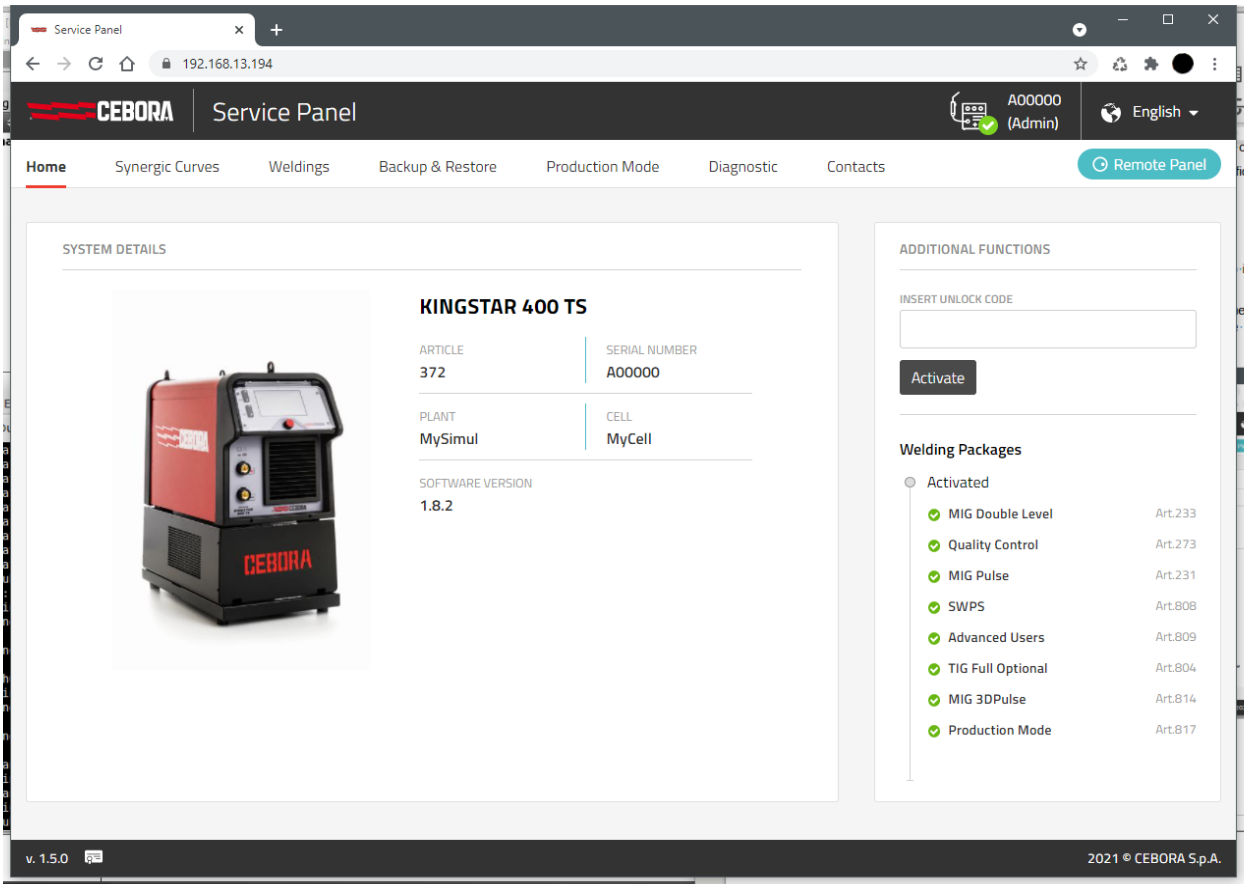
This document refers to KINGSTAR and WIN TIG MIG generators with software version **1.8** or higher that include support for MQTT **3.1.1** client version.

For REST API documentation refer to the specific document version **1.8.1** or later.

1.1 Network connection

Configure the LAN network by following the instructions with code 3301067A and by installing the trusted root certificate in all client computers.

By typing the generator address in a browser, the homepage of the web app should open without displaying any warning about the trustworthiness of the site and in the address bar there should be a closed padlock icon.



SYSTEM DETAILS

KINGSTAR 400 TS

ARTICLE
372

SERIAL NUMBER
A00000

PLANT
MySimul

CELL
MyCell

SOFTWARE VERSION
1.8.2

ADDITIONAL FUNCTIONS

INSERT UNLOCK CODE

Activate

Welding Packages

Activated

✓ MIG Double Level	Art.233
✓ Quality Control	Art.273
✓ MIG Pulse	Art.231
✓ SWPS	Art.808
✓ Advanced Users	Art.809
✓ TIG Full Optional	Art.804
✓ MIG 3DPulse	Art.814
✓ Production Mode	Art.817

v. 1.5.0

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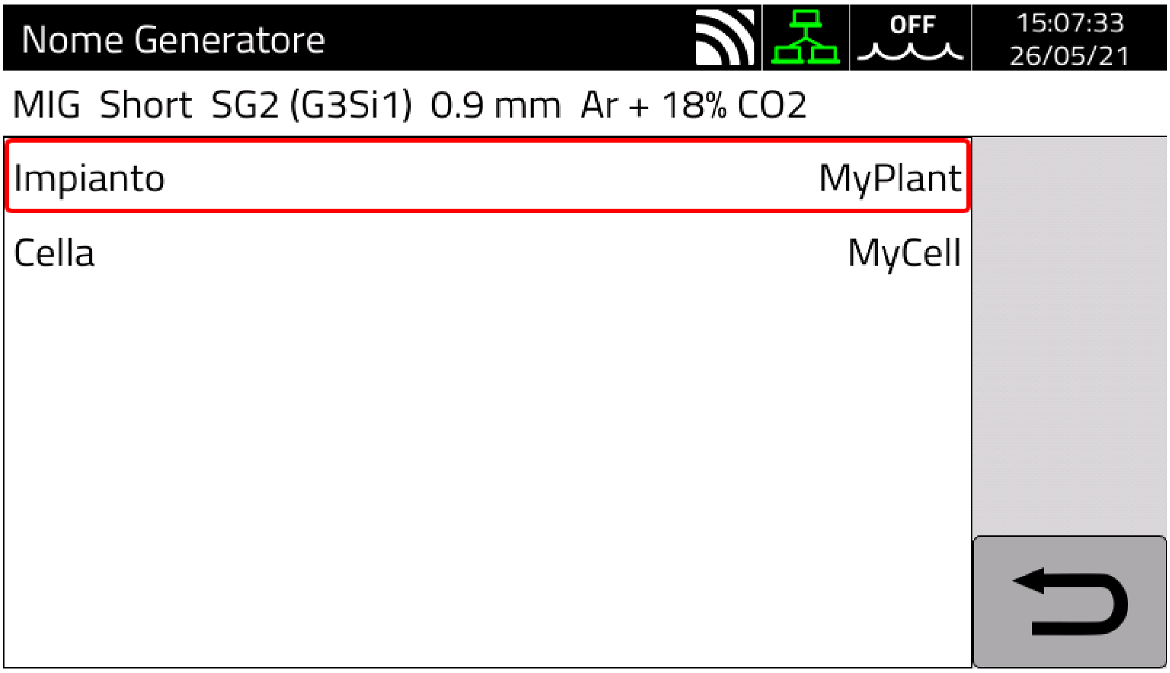
1.2 Generator name

On the homepage, among the machine general information, the fields PLANT and CELL are visible, which must be configured appropriately using the virtual keyboard on the generator panel:

```
MENU → Settings → Generator Name
```



Nome Generatore

15:07:33
26/05/21

MIG Short SG2 (G3Si1) 0.9 mm Ar + 18% CO2

Impianto MyPlant

Cella MyCell

The ARTICLE and SERIAL NUMBER codes are preset by the manufacturer and cannot be changed.

2 MQTT configuration

2.1 Customisable MQTT parameters

Use the virtual keyboard from the generator panel to set the server connection parameters:

```
MENU → Settings → MQTT
     Broker URL
     Username
     Password
```

The generator uses as *client-id* the string composed by COMPANY-SERIAL NUMBER and as *topic* prefix the fields PLANT and CELL. In this example:

```
client-id:          CEBORA-P2631A
topic-prefix:       MyPlant/MyCell/
```

2.2 Other preset MQTT parameters

There are also other parameters of the MQTT configuration that are not currently modifiable from the user interface, in particular:

Quality of Service:

`QoS0`	the message is sent once without ACK (*default*)
`QoS1`	the message is sent until an ACK is received
`QoS2`	dual handshake to ensure only one message is sent

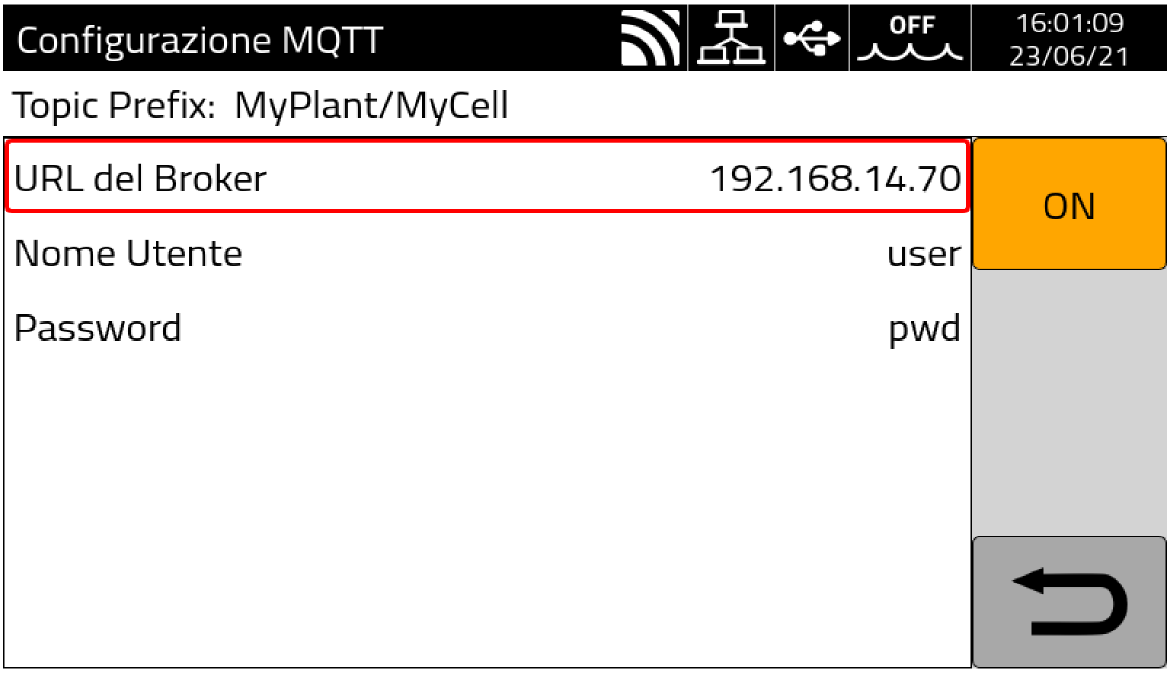
Connection Type:

`http`	non-secure connection – default port 1883
`https`	secure connection* – default port 8883

Port number:

Only the default ones.

Press the `ON` button to activate the MQTT client in the generator.



Configurazione MQTT

16:01:09
23/06/21

Topic Prefix: MyPlant/MyCell

URL del Broker 192.168.14.70

Nome Utente user

Password pwd

If the client successfully connects to the server, a fixed MQTT icon appears in the top status bar.

If the client is failing to connect to the server, the MQTT icon flashes; the client retries the connection at regular intervals as long as the ON button is active.

3 Operation

3.1 Status message

For each status change (OPERATIONAL, WARNING, ERROR, etc.) the generator automatically sends a message identified by the topic `<topic-prefix>/state` containing the general machine status, the welding status and the list (if any) of active errors using the JSON format in the payload.

```
{
  "id" : "CEBORA-P2631A",
  "processState" : {
    "active" : false,
    "welding" : false
  },
  "systemState" : "operational"
}
```

The payload is identical to what you can obtain via the REST API:

```
GET   https://<power-source-ip>/api/state
```

enriched with the `“id”` field valorised with the MQTT client identifier.

This message is *retained* and therefore is still sent to clients that subscribe after the generator has connected.

In case of sudden disconnection from the network, the generator prepares the broker with its *Last Will and Testament* (LWT), which consists in sending to all subscribed clients the status message with the field `“systemState”: “offline”`.

The possible values of the `“systemState”` field are: `init, operational, warning, error, poweroff, update, reset, offline`.

In the `operational` state the generator can perform the weld which is signalled with Boolean flags:

`active`: welding process in progress (also includes the off-arc phases such as pregas and postgas)

`welding`: arc welding in progress

3.2 Welding message

For each weld bead (START – STOP sequence) the generator automatically sends a message identified by the topic `<topic-prefix>/measureLog` containing the summary data of the weld performed using the JSON format.

```
{
  "arcOnCount" : 4079,
  "arcOnTime" : 1.3,
  "avgCurrent" : 25.6,
  "avgMotorCurrent" : 0.2,
  "avgVoltage" : 14.4,
  "avgWireSpeed" : 1,
  "energy" : 0,987,
  "gasOnTime" : 4.47,
  "id" : 0,
  "jobId" : 2,
  "jobsName" : "ABCXYZ01",
  "mainCurrentTime" : 1.29,
  "pieceId" : 5,
  "qcArcLostResult" : 0,
  "qcCurrentResult" : 0,
  "qcMainTimeResult" : 0,
  "qcResult" : 0,
  "qcVoltageResult" : 0,
  "startTimeStamp" : "2021-05-21T14:33:24",
  "suppliedGas" : 0.74,
  "suppliedWire" : 0,022,
  "suppliedWireWeight" : 0.13793999999999998,
  "trackingId" : "F2021003",
  "welder" : "",
  "weldingTime" : 4.49
}
```

The payload is similar to what you can obtain via the REST API:

```
GET   https://<power-source-ip>/api/measurelogs
```

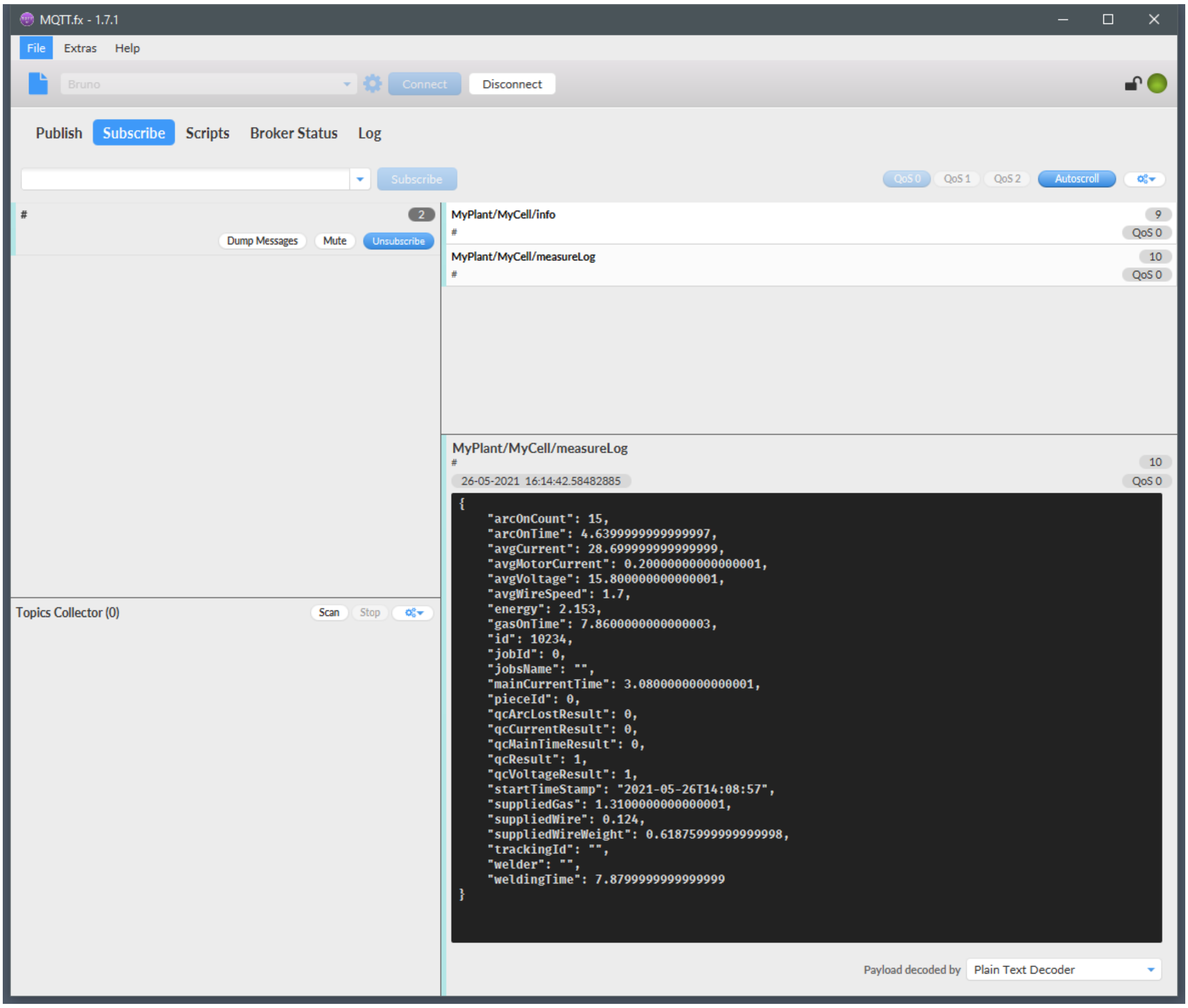
This message is *non-retained*, so clients must subscribe before the generator begins to weld.

Some fields of the structure (e.g. `“trackingId”`*)* are populated only if certain functions are activated in the generator (e.g. *Production Mode* art. 817 option)

Some non-integer numeric fields have several decimal places and must be appropriately rounded on receipt. This is a defect attributable to the current library in use and may be fixed in future releases.

4 Test

The tests were carried out both in local network and in public network, using the **Eclipse Mosquitto** software as broker and the **MQTT.fx** software as client



MyPlant/MyCell/measureLog
#
10
26-05-2021 16:14:42.58482885
QoS 0

```
{
    "arcOnCount": 15,
    "arcOnTime": 4.6399999999999997,
    "avgCurrent": 28.699999999999999,
    "avgMotorCurrent": 0.20000000000000001,
    "avgVoltage": 15.800000000000001,
    "avgWireSpeed": 1.7,
    "energy": 2.153,
    "gasOnTime": 7.8600000000000003,
    "id": 10234,
    "jobId": 0,
    "jobsName": "",
    "mainCurrentTime": 3.0800000000000001,
    "pieceId": 0,
    "qcArcLostResult": 0,
    "qcCurrentResult": 0,
    "qcMainTimeResult": 0,
    "qcResult": 1,
    "qcVoltageResult": 1,
    "startTimeStamp": "2021-05-26T14:08:57",
    "suppliedGas": 1.3100000000000001,
    "suppliedWire": 0.124,
    "suppliedWireWeight": 0.61875999999999998,
    "trackingId": "",
    "welder": "",
    "weldingTime": 7.8799999999999999
}
```

Payload decoded by Plain Text Decoder