Advantech™ WISE-4050

Installation Guide for TIG 2go

Revision 1.4.

Table of contents

1. Scope

This installation guide describes the configuration of Advantech™ WISE-4050 (device) for usage with TIG 2go. This device is connected with four wires to digital outputs of the machine and sends this information to the TIG 2go cloud.

Installation and commissioning, such as cabling, shall be carried out in a thoroughly professional manner by duly trained and qualified personnel. In case of any queries regarding the machine interface, please contact the machine manufacturer.

1.1.   Hardware variants

Advantech™ provides two hardware variants (WIFI and LAN version):

Advantech™ WISE-4050	**Advantech™ WISE-4050/LAN**

For more information on the device please refer to the manual by the manufacturer which can be downloaded here.

1.2.   Reference

WISE 4050 is a product of:

Advantech Co., Ltd., No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 11491, Taiwan, R.O.C.

Tel: 886-2-2792-7818, Toll Free: 0800-777-111 | https://www.advantech.com

2. Quick start

2.1. Setup

Switch off the machine and wire the Advantech™ device with the machine (24V DC). Default mapping:

- DI0: Online/Offline

- DI1: Producing/Not Producing

- DI2: Good Cycle

- DI3: Bad Cycle

2.2. Configure

Switch on the machine and configure the device:

- Configure internet connection depending on local network.

- Configure MQTT broker settings:

    o MQTT Host Name: mqtt-cred.tig2go.com

    o Port Number: 61614

    o SSL secure: Enable

    o User Name: tig2gouser

    o Password: abysm-manager-bump-boulder

- Enable logging via push notifications for all channels (Change of State)

- Recalibrate Time

2.3. Connect

Connect the device with the internet (cable or Wi-Fi).
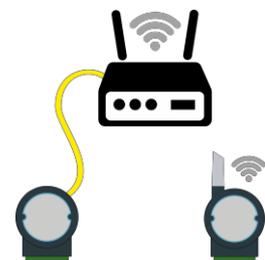
2.4. Register

Register the device at TIG:

- Serial number

- Customer details

- Machine name and configuration

3. Hardware setup

3.1.   Step 1: Internet connection

Connect the device with the internet.

3.1.1. Wi-Fi

– Power up using a 10~30V power supply, that's connected between the +Vs and -Vs pin.

– Enable the Wi-Fi interface on your device and make sure the Wi-Fi adapter is in DHCP mode.

– Select the SSID: "WISE- 4050_MAC"

– Open the browser and enter the configuration page (http://192.168.1.1/config). Login with account: root and password: 00000000.

– Scroll to "Network Information", click "Go to Configuration" and enter your Wi-Fi connection information.
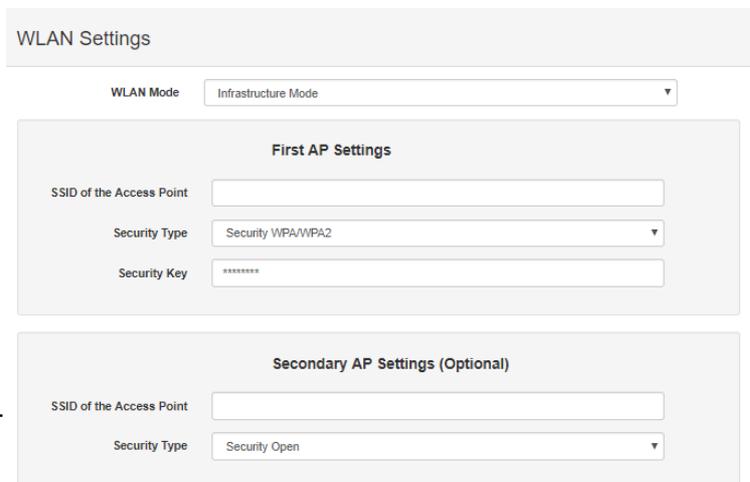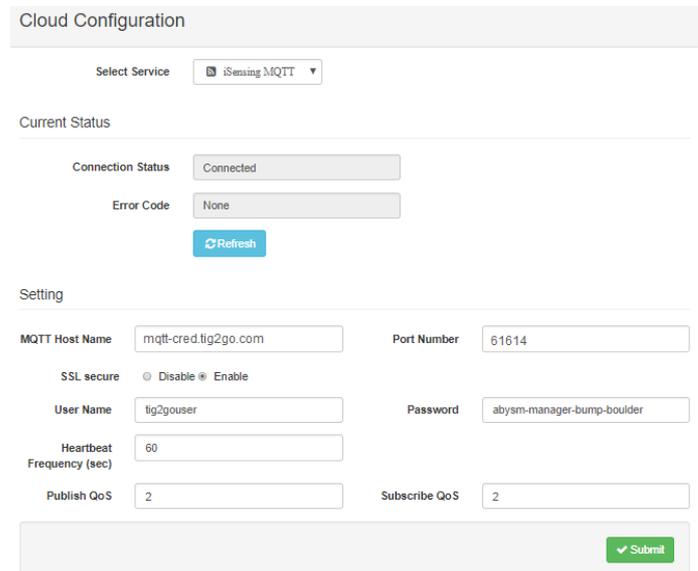
3.1.2. LAN

– Power up using a 10~30V power supply, that's connected between the +Vs and -Vs pin.

– Use an Ethernet cable to connect between the RJ- 45 port and the Ethernet switch

– Set the IP address of your device to the same as your IP domain. The default IP address of the WISE module is 10.0.0.1. For example, set your PC's IP address to 10.0.0.100.

– Open the browser and enter the configuration page (http://10.0.0.1/config). Login with account: root and password: 00000000.

– Scroll to "Network Information", click "Go to Configuration" and enter your network configuration.

3.2. Step 2: Cloud connection

Connect the device with the MQTT broker.

- In "Configuration" select tab "Cloud"

- In Cloud Configuration Select Service "iSensing MQTT" Note: If this option is not available, please install the latest firmware directly from Advantech™

- Enter the MQTT Settings:

  - MQTT Host Name: mqtt-cred.tig2go.com

  - Port Number: 61614

  - SSL secure:

  - Enable

  - User Name: tig2gouser

  - Password: abysm-manager-bump-boulder

  - Hearbeat Frequency (sec): 60

  - Publish QoS: 2

  - Subscribe QoS: 2

- Submit and ensure that the Connection Status is "Connected"

3.3. Step 3: Device configuration

Configure the device, so that it sends the data to the MQTT broker.

- Go to "Advanced" -> "Data Logger"

- In tab "Data Configuration":

  - In "Log Data" -> "Channel Fields": For all Input Channels (0 - 3) enable "Change of State"

- In tab "Logger Configuration":

  - In "Push Notification (JSON format)"

    - enable "I/O Log"

    - activate "Push Timestamp"

    - Set "Timestamp Format" to "Coordinated Universal Time(UTC)"

3.4. Step 4: Device registration

Register the device at TIG.

Send the following information via e-mail to tig2go@tig.at:

- Serial number of the device. The serial number is 12 digits long and printed on a sticker on the back of the device

  - Customer details:
  - Customer name
  - Admin email*
  - Read-Only email*

    * The login credentials for the admin and read-only user are sent to the respective email addresses. The admin email will have more rights on the TIG2go platform.

- Name of the connected machine

- The name will be used to identify the machine in the TIG2go platform. Currently only alphanumeric characters are supported.

- Configuration of the connected machine

  - Counter information for Input Ports 3 and 4 ("Alternate signaling" or "Concurrent signaling")

4. Input port mapping

In order to get correct information, TIG 2go requires the input ports DI0 to DI3 be mapped to the following signals from the machine:

4.1.   Status information

The first two wires are expected to be connected to a continuous signal for the machine and production status. Each change of TRUE/FALSE in any direction is considered a status change and will be recorded.

Input Port	Meaning	Explanation
DI0	ONLINE / OFFLINE	Signals the "on" state of the connected device, e.g. a machine. A "True" signal is interpreted as ONLINE, "False" as OFFLINE. In order to provide useful information, the machine interface should not just signal its own "power on" status, but communicate whether or not the machine itself is up and "ready to go". The informative value of this status information depends on the ability of the machine's host computer to determine and transmit a meaningful machine ONLINE / OFFLINE condition.
DI1	PRODUCING / NOT PRODUCING	Signals whether the device is running. A "True" signal is interpreted as PRODUCING. This status should be signaled whenever the production status of the machine is "Production". A "False" signal is interpreted as NOT PRODUCING. As with the ON / OFF status, the informative value of the RUNNING / STOPPED status information depends on the ability of the machine's host computer to properly determine and transmit the machine's current production status.

4.2. Counter information

With the last two wires TIG 2go maintains two counters for produced parts—one for good parts ("yield") and one for bad parts ("scrap"). In order to provide these counters with meaningful information, the machine has to signal after each cycle

- that a cycle was completed, and

- whether the cycle was good or bad.

There are two different ways for machines to signal good and bad production cycles. TIG 2go will handle the different behavior of the machine interface on the platform according to the machine specific configuration provided during registration.

4.2.1. Alternate signaling systems

After every completion of a good cycle this information is signaled over one wire (the "good" signal line), whereas a bad cycle is signaled over the other wire (the "bad" signal line). Good and bad cycles will therefore result in raising a "True" signal in one of the two counter lines (but never in both of them at the same time).

Input Port	Meaning	Explanation
DI2	GOOD CY-CLE	Signals the completion of a "good" cycle that resulted in the production of a good part or several good parts, depending on the mold's cavity. The part or parts produced are counted as good. On each "True" signal received, the GOOD PARTS COUNTER is incremented.
DI3	BAD CYCLE	Signals the completion of a "bad" cycle that resulted in the production of scrap. On each "True" signal received, the BAD PARTS COUNTER is incremented.

4.2.2. Concurrent signaling systems

After each completion of a cycle (good or bad), the "cycle completed" information is signaled over one wire (the "cycle" signal line). If at the same moment nothing is signaled over the other wire (the "scrap" signal line), the cycle is considered good. If the cycle was bad, the machine will signal that information over the "scrap" signal line at the same time it signals the "cycle completed" information over the "cycle" signal line. Bad cycles will therefore result in raising a "True" signal in both counter signal input ports. The TIG daas system will recognize and correctly handle these situations by counting such cycles as bad.

Input Port	Meaning	Explanation
DI2	CYCLE COM-PLETED	Signals the completion of a cycle. On each "True" signal received, the GOOD PARTS COUNTER is incremented if and only if the BAD CYCLE INDICATOR at this moment signals "False".
DI3	BAD CYCLE INDI-CATOR	Signals that the completed cycle was "bad" and resulted in the production of scrap. On each "True" signal received, the BAD PARTS COUNTER is incremented.

5. Revision index

Date	Revision	Author	Commentary
2018-Dec-18	1.0	VB	Initial Version.
2019-Jan-17	1.1	VB	Corrected MQTT settings port.
2019-Mar-20	1.2	VB	Added quick start section.
2019-Mar-28	1.3	PL	Added Reference
2019-Apr-02	1.4	VB	Adapted to CI