

wCube-1000

User Manual

Product Model: wCube-1000

Part Number: 800-P01-100

Doc Number: DT-XX-XXX

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1. Introduction

wCube-1000 (hereafter referred to as wCube) system is a customized portable cabin Wi-Fi system to integrate Tencent and Aircom portal.

This user manual is referred for the integration and operation of wCube.

2. Scope

This user manual mainly describes the basic operation and configuration of wCube.

3. Abbreviation

AC: Alternating Current

ADS-B: Automatic Dependent Surveillance - Broadcast

CWAP: Cabin Wireless Access Point

DC: Direct Current

wCube: Wireless Cube

SIM: Subscriber Interface Module

4. System Specification

The hardware specification of wCube is referred in Table 4-1.

Table 4-1 wCube Specification

Item	Specification	Remarks
Processor	Intel Core i7-4702HQ	
Memory	16 GB DDR3	
Storage1	>=64 GB	Built-in SATA SSD for OS
Storage2	2 TB SSD as default, actual configuration per PO	Removable SSD (M.2 Interface2280/NVME) for content storage. Can support 2TB, 3.8TB, 8TB, 16TB M.2 SSD

		(16TB is not available on market yet)
Ethernet	1 x 10/100/1000 Mbps	Model: FB-24-RJ45 RJ45 Port, to be used for Maintenance in the first 100 sets shipment for HKA, and for Internet Access trial in American Southwest with a different internal network configuration.
USB	1 x USB2.0	Only for maintenance
Video	1xVGA	Only for maintenance
Hardware Control	Button x 3: 1, Power ON/OFF 2, 4G ON/OFF 3, Wi-Fi ON/OFF	For Manually: 1, System power control 2, 4G radio control 3, Wi-Fi radio control Note: Passenger Announcement control (optional) is soft button on crew's tablet
Indicator	3 x LEDs	1 x Power on/off LED 1 x 4G on/off LED 1 x Wi-Fi on/off LED
Wi-Fi	Wi-Fi 6	IEEE 802.11 a/b/g/n/ac/ax Frequency: 802.11ax/ac/n/a: 5.725 GHz~5.850 GHz; 5.15 GHz~5.25 GHz. 802.11ax/b/g/n: 2.4 GHz~2.483 GHz. Max data rate: 5.95 Gbps MU-MIMO
Cellular	2 x 4G module (one active, one standby)	With embedded antennas
Power supply	28 V DC	Support 20V~36VDC power supply
Power consumption	Max: ≤ 75W Typical: ≤ 65W	
Power Interface	wCube Power Plug Connector P/N: EN3646A61608AN (without pins furnished) Pin P/N: EN3155-018M1616 Connector Backshell P/N: ASNE0080-01-16-C (straight)	

Size	322.1*265.1*130.1mm	322.1*285.1*130.1mm (including external antenna)
Weight	≤5 kg	
Work temp.	-15~ +55 degree	Centigrade
Storage temp.	-40~ +70 degree	Centigrade
Humidity	≤ 95%, no condensation	
Flammability	Per CCAR 25.853	Appendix F
Qualification	CE, FCC	
MTBF	≥25000 Hours	

5. System Interface Desc.

wCube is a portable cabin Wi-Fi and inflight entertainment system, with main functions as following:

- Cabin Wi-Fi service.
- Entertainment content storage.
- 4G data transmission.
- ADS-B data reception.
- Entertainment portal access via Wi-Fi network.

The appearance and interface of wCube is shown in Figure 5-1.



Figure 5-1 wCube overview

5.1 Power Switch

**Figure 5-2 wCube Power Button**

The power switch on the front panel of wCube is shown in Figure 5-2.

For the flight safety consideration, the power switch of wCube adopts self-locking switch with two state positions Power On and Power Off.

Push the power switch to the Power On position to make the power staying On and push again to the Power Off position to make the power staying Off.

5.2 Power Input

The 28 VDC power input interface of wCube is shown in Figure 5-3.



Figure 5-3 28VDC Power Input

5.3 RJ45 Ethernet Interface

The RJ45 ethernet interface of wCube, as shown in Figure 5-4, is used as maintenance ethernet interface or external WLAN interface.



Figure 5-4 RJ45 Interface

5.4 SSD Storage Interface

Open the front panel as shown in Figure 5-5, and then the SSD interface is shown as Figure 5-6.

When inserting SSD, keep the surface with marking “UPSIDE” as upside and the Type C interface as inside.

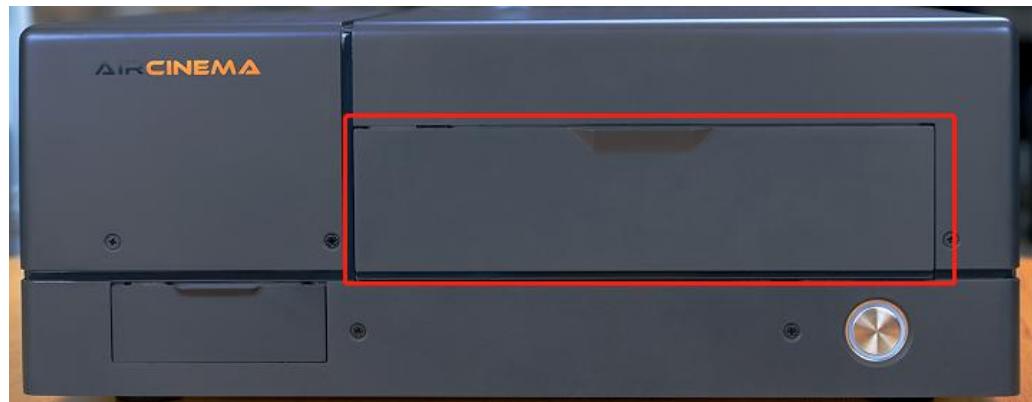


Figure 5-5 Interface Front Panel



Figure 5-6 SSD Interface

5.5 Wi-Fi Switch

As shown in Figure 5-7, the Wi-Fi switch is used to reset Wi-Fi access point in wCube.



Figure 5-7 Wi-Fi Switch

5.6 4G Switch

The 4G switch of wCube is shown in Figure 5-8.

For the flight safety consideration, the 4G switch of wCube adopts self-locking switch with two state positions 4G module On and 4G module Off.

Push the switch to the 4G On position to make the 4G module staying On and push again to the 4G Off position to make the 4G module staying Off.



Figure 5-8 4G Switch

5.7 USB Interface

As shown in Figure 4-9, the USB2.0 interface is used to connect external USB devices.



Figure 5-9 USB Interface

5.8 VGA Interface

As shown in Figure 5-10, the VGA interface is used to connect VGA display to show system maintenance window of wCube.



Figure 5-10 VGA Interface

5.9 SIM Card Interface

As shown in Figure 5-12, there are two SIM card interfaces in wCube.



Figure 5-11 SIM Card Front Panel



Figure 5-12 Two SIM Card Interfaces



Figure 5-13 SIM Card Orientation

6. Test Guide

6.1 Test Equipment and Tools

Table 6-1 Test Equipment and Tools

Item No.	Desc.	Amount	Specification	Notes
(1)	wCube	1	Model: wCube-1000 Part Number: 800-P01-100	
(2)	AC Power	1	100~240V, 50/60Hz	
(3)	AC-DC Power Convertor	1	LPV-100-24 INPUT: 100~240V 2.2A 50/60Hz OUTPUT: 24V 4.2A	
(4)	Ethernet Cable	1	General	

Item No.	Desc.	Amount	Specification	Notes
(5)	PC	1	MS Windows7 or above version Wireless ethernet card 1000 Mbps Ethernet port SSH application, e.g. SecureCRT_6.5.3.490	
(6)	USB disk	1		
(7)	SIM Card	2	4G SIM cards	
(8)	VGA Display	1	VGA display with VGA cable	Optional
(9)	USB Keyboard	1		Optional
(10)	USB Mouse	1		Optional
(11)	USB Hub	1		Optional
(12)	Test Terminals	2+	Android / iOS smart phone or PAD	

6.2 Test Method

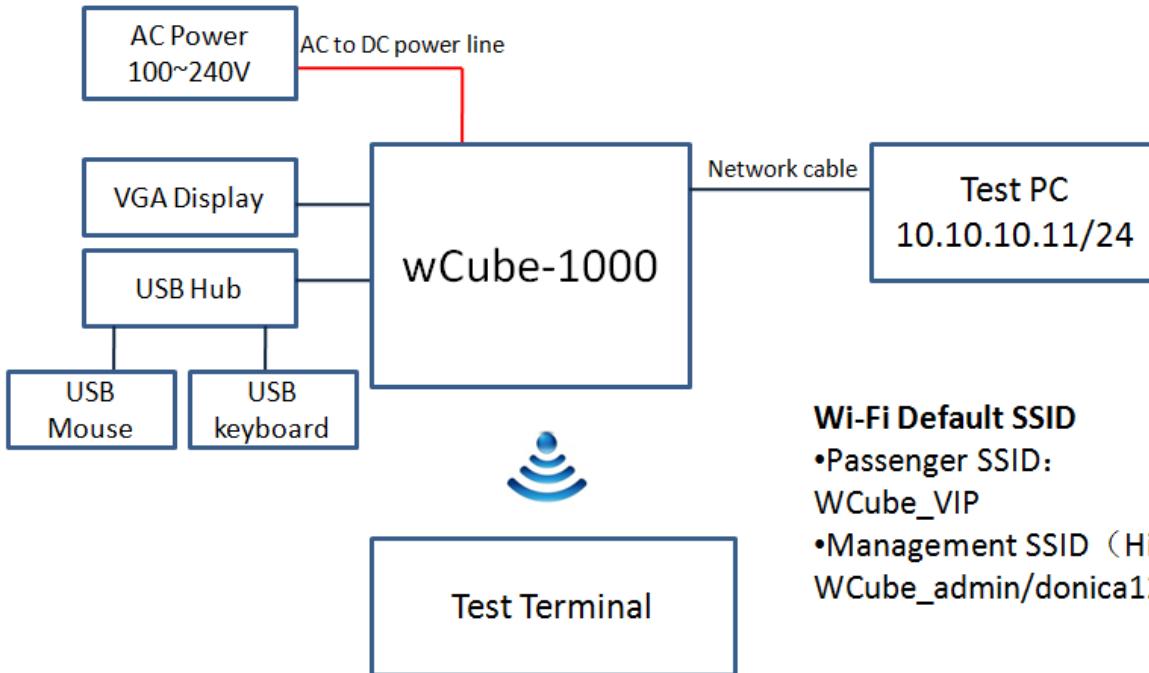


Figure 6-1 Test Environment

1. As shown in Figure 6-1, build up the test environment with VGA Display, USB Hub, USB Mouse and USB keyboard as optional.
2. Set the static address of ethernet cable port on PC to 10.10.10.11/24 and access wCube maintenance window page by URL <http://10.10.10.10/CMT> in the browser, and then access wCube operating system via SSH tool (SSH 10.10.10.10, User/password: root/donica_wifi).
3. The PC with wireless ethernet card can also access wCube maintenance window page by URL <http://192.168.2.99/CMT> in the browser via hidden maintenance Wi-Fi SSID (default SSID WCube_admin, default password donica123), and then access the operating system via SSH tool (SSH 192.168.2.99, user/password: root/donica_wifi).

7. OAM Software Basic Operations

Step 1 Input OAM URL in the browser, <http://10.10.10.10/CMT> for ethernet cable access and <http://192.168.2.99/CMT> for wireless access.

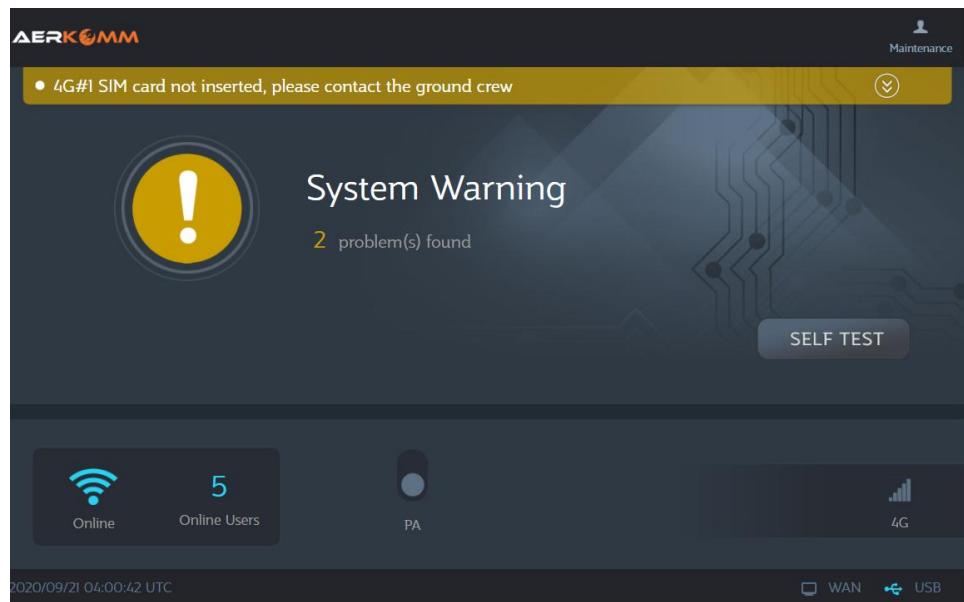


Figure 7-1 OAM Home Page

Step 2 Click on Maintenance on the upper-right corner to login maintenance pages, as shown in Figure 6-2.

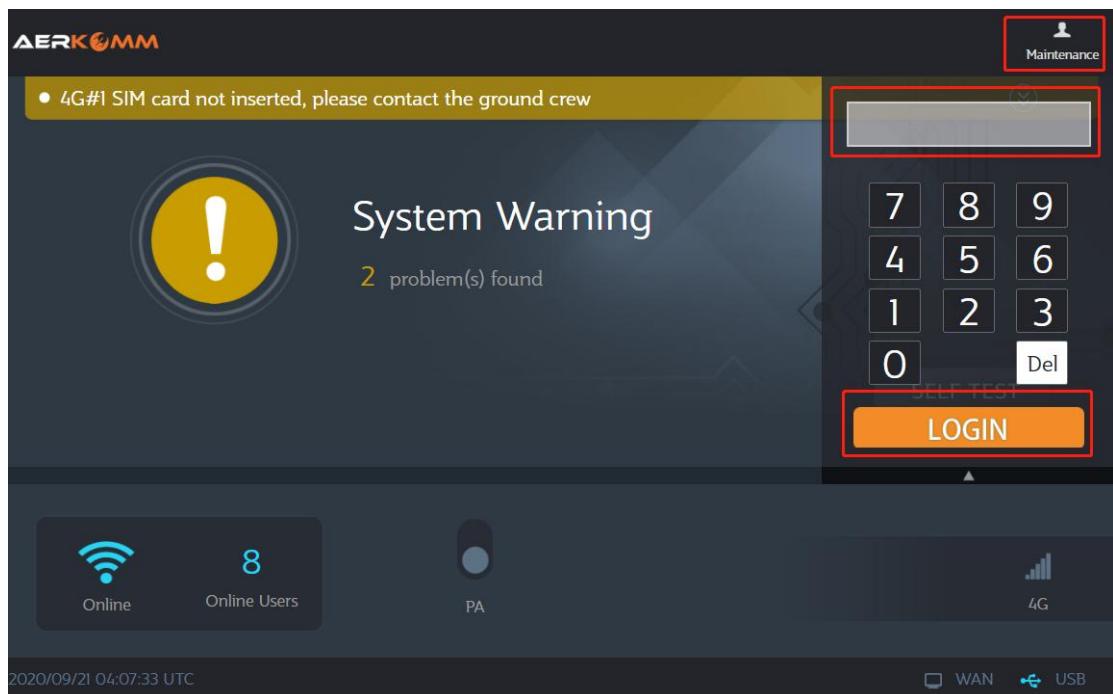


Figure 7-2 Maintenance Window Login

Step 3 Input password “2731” to login the home page of maintenance window, as shown in Figure 7-3.

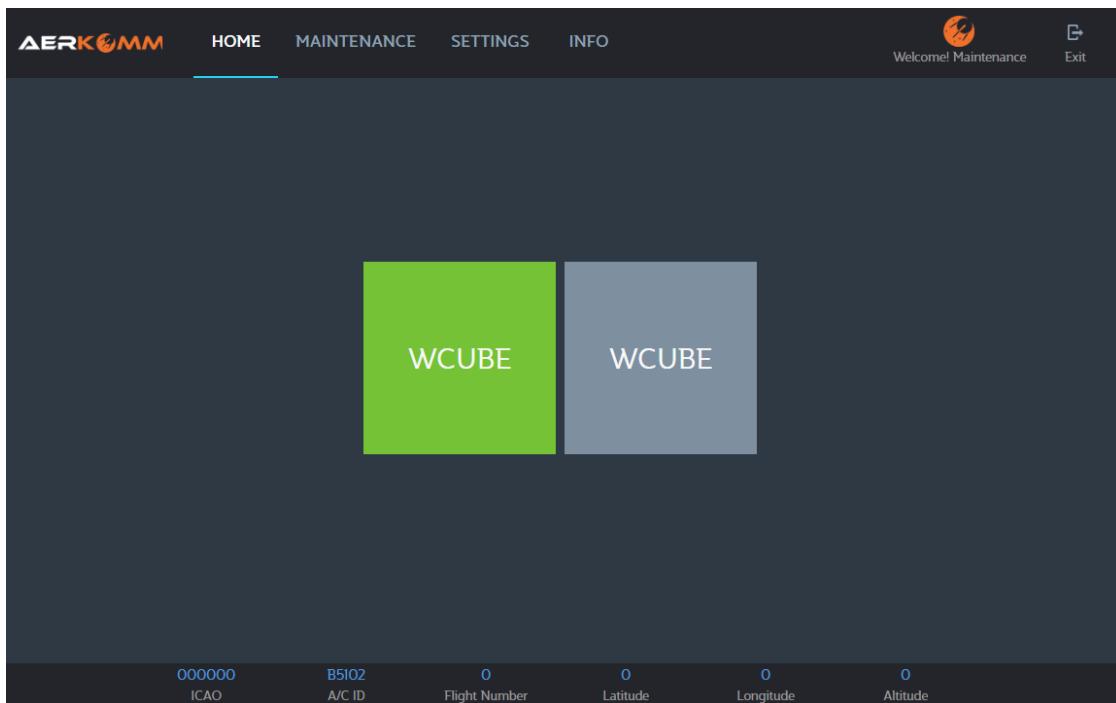


Figure 7-3 Maintenance Home Page

Step 4 Select “SETTINGS” -> “Initial Settings” to configure A/C ID, ICAO, wCube Preset AP channel A or B, Wi-Fi mode Gate2Gate, as shown in Figure 7-4.

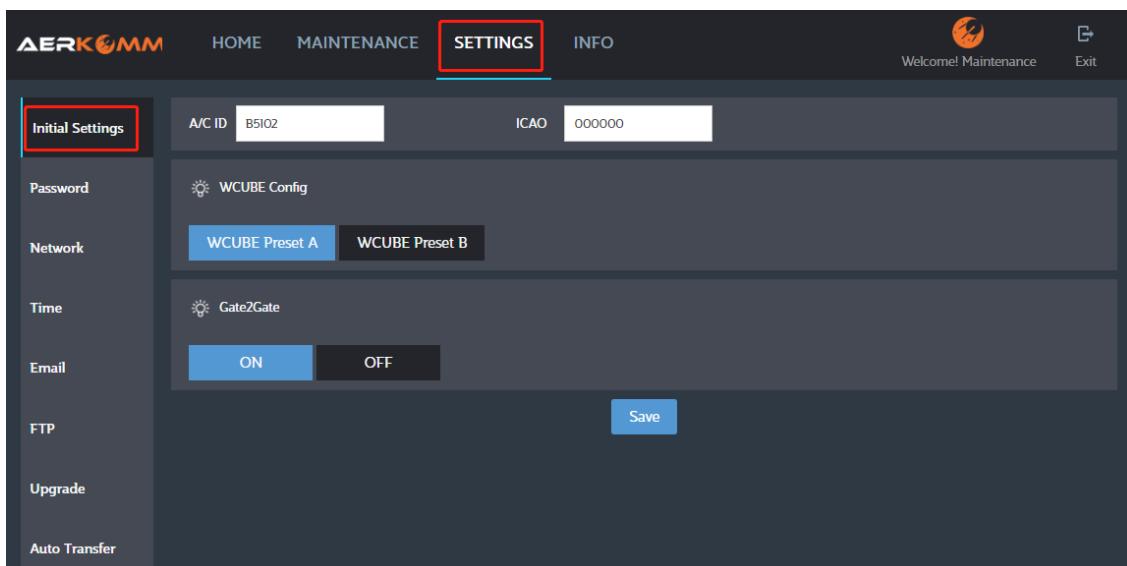


Figure 7-4 Initial Settings Page

Note: For ground testing without ADS-B signal, 4G function can be kept as state ON while setting ICAO as 000000.

Step 5 Select “SETTINGS” -> “Network” to configure network parameters, including SSID,

4G Card APN, Captive Portal URL, 4G Passenger Access Control, WAN network configurations.

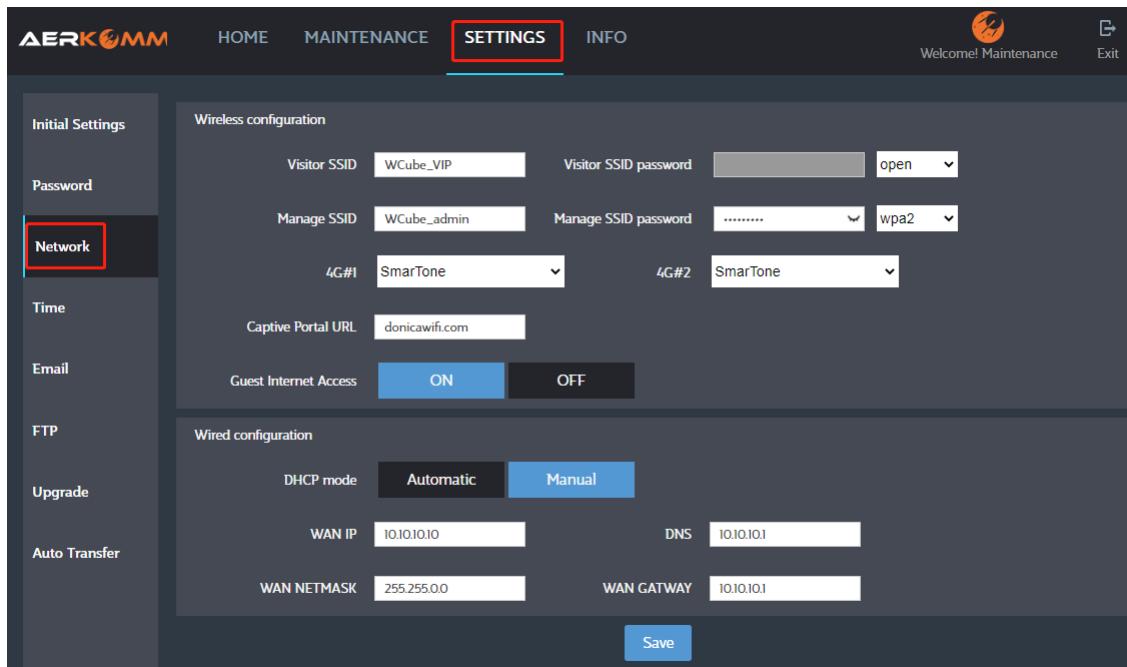


Figure 7-5 Network Configuration Page

FCC Warning

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 50cm between the radiator and your body.