User Manual for LEO-S Cold Chain Management (TREK-120 & USM-S62)

V1.2

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Chapter 1 General Information

1.1 Introduction

Advantech Cold Chain Management offer a full function of Temperature and Humidity control analysis in supply chain. This LEO-S CCM Kit can apply in many environments such as hypermarket, food factory, museum, warehouse, medical management, etc. For use with us in-vehicle gateway, our LEO-S can achieve Uninterrupted Real-time Cold Chain Management.

This LEO-S CCM kit content USM-S62 as gateway install inside the building, and TREK-120G2 as sensor in every container or any place need temperature management.

1.2 General Specification

1.3 Installation flowchart



Chapter 2 System Setup

2.1 A Quick Tour of the LEO-S CCM Hardware Kit – TREK-120G2 2.1.1 Outlook



Figure 1 Front View of TREK-120G2

Figure 2 Back View of TREK-120G2

2.1.2 LED behavior

	し Power/Status LED	Alarm LED
Standby	Green	N/A
Recording	Green	Green
Low Battery	Red	N/A
Over Critical	Green	Red

2.1.3 Mounting Methods



Figure 3 Three Different Mounting Methods of TREK-120G2

2.1.4 Battery Replacement

- Step 1. Release 4 Screws on battery cover
- Step 2. Open battery cover
- Step 3. Take off the battery
- Step 4. Install the new battery



Figure 4 Replace battery of TREK-120

Specifications

	Measurement Range	-30 ~ 70 °C (-22 ~ 158 °F)
Temperature	Accuracy Range	±0.4 °C from -10 ~ 70 °C (±32.72 °F from 14 ~ 158 °F) ±0.8 °C from -30 ~ -10 °C (±33.44 °F from -22 ~ 14 °F)
	Resolution	0.1 °C (32.18 °F)
Deletine	Measurement Range	0 ~ 80% Relative Humidity
Humidity	Accuracy Range	±3% from 0~80% at 30°C (*The variation in accuracy is 0.05%/C)
NEC	Frequency	13.56MHz
NFC	Function	Configuration and Sensor data bulk download
	Wireless Technology	Advantech LoRa technology
LoRa	Frequency	920-925MHz for Taiwan 902-928Mhz for US 863-870MHz for Europe 470-510MHz for China
	Wireless Range	>500 meters (line of sight)
	Topology	Star
Data Storage Capacity		Datalogs 5000 readings
LED Indicators		1 x Power status 1 x Alarm
Buttons		1 x Start button
Battery		3V/2400mAh wide-temperature primary (non-rechargeable) battery
Data Transmissions		NFC + LoRa
	Mount Options	Fixed by adhesive tape, magnet, fastener, screws
Mechanical	Dimensions (W x D x H)	123.47 x 65 x 24.5 mm (4.88 x 2.56 x 0.91 in)
	Weight	108 g (0.23 lb)
	Operating Temperature	-30 ~ 70 °C (-22 ~ 158 °F)
E	Storage Temperature	-40 ~ 85 °C (-40 ~ 185 °F)
Environment	IP Rating	IP65
	Drop Tolerance	4 ft. drop onto concrete
	Certifications	CE/FCC/NCC/CCC

*Battery life time depends on operating environments

Note: NFC function is only Rx

2.2 A Quick Tour of LEO-S CCM Hardware Kit – USM110-S62 2.2.1 Outlook



Figure 7 USM-S62 Card Socket View

2.2.2 LED behavior



Figure 8 LED Behavior of USM-S62

	Left LED	Right LED
Power On	Green	Blue
Initializing	Green Orange Cross	N/A
Ready	Orange	N/A

2.2.3 Mounting Methods



Figure 9 Mounting Method of USM-S62

Chapter 3 Software Demo Utility Setup

3.1 USM-S62 EdgeX-Go installation

EdgeX-Go Overview

Before we run EdgeX-Go on USM-S62 we must prepare at least 4GB memory size micro SD card. And stored three files into the micro SD card Edgex-go USM-S62 Edgex_installer Edgex-go provide an environment for USM-S62 program, and the program will collect MQTT data from Lo-Ra antenna, final upload to WISE-PaaS. Edgex_installer is a program for automatically start EdgeX service and USM-S62 program.

After we insert micro SD card, and power on USM-S62 device. We need to set our IPv4 Net-ID as same as USM-S62 but different Host-ID and also same subnet mask of network socket on our laptop/PC.

Management IP address	172.0.0.1
Mask address	255.255.255.0

Open "Network & Internet", and click "Ethernet".

settings						
		W	Vindc	ws Settings		
		Find a setting	g		,a	
旦	System Display sound, hotifications power		Devic Blueto	es oth. printers. mouse		Phone unk your Android, iPhone
	Network & Internet	Ø.	Perso Backgr	nalization ound, lock screen, colors		Apps Uninstall, defaults, optionol teature:
8	Accounts Your accounts, annal, sync, work, ather peddle	A=	Time	& Language 1. region date	8	Gaming. Gamir par, BVB, broudcasting, Gamp Wode
Ģ	Ease of Access Narratot, magnifier, high contrast	0	Corta Cortan riobfic	na a language, centissions, alions	A	Privacy Location, camera
C	Update & Security Windows Update, recovery backup					
← Setting	s					- 0
命 Home			Sta	itus		
Find a setti	ng	Q	Net	work status		
Network & Ir	nternet		Ę	Famiglia_2	2GHz work	$-\bigoplus$
<i>i</i> Wi-Fi ₩ Ethernet	:		You If you mete	're connected to u have a limited data red connection or c	the Inte a plan, yo hange ot	ernet ou can make this network a her properties.
͡ Dial-up			Char	ige connection prop	perties	
% VPN			Shov	v available networks		
r Airplane	e mode		Cha	nge your netw	ork set	tings
(q) Mobile I	hotspot		₽	Change adapter op	otions	ae connection settinas.
🕒 Data usa	age		邻	Sharing options	and undif	
Proxy			2	For the networks you	connect to	, decide what you want to share.

And will show Ethernet configuration interface. Choose "Change adapter options". Right click chooses "Properties".

Home Ethernet Find a setting Ethernet Letwork & Internet Ethernet Not connected Status Status Related settings & Wi-Fi Change adapter options Ethernet Change advanced sharing options Ethernet Change advanced sharing options Dial-up Network and Sharing Center VPN HomeGroup Organize • Image advanced sharing options Image advanced sharing options <	← Settings		- 0 >
Find a setting Ethernet Ethernet Ethernet Not connected Status Wi-Fi Change adapter options Ethernet Change advanced sharing options Ethernet Change advanced sharing options Dial-up Network and Sharing Center VPN HomeGroup Network Connections - Image advanced sharing options - Network Connections - Image advanced sharing options - Network Connections - Image advanced sharing options	වී Home	Ethernet	
Letwork & Internet Ethernet Not connected Status Related settings Wi-Fi Change adapter options Ethernet Change advanced sharing options Dial-up Network and Sharing Center VPN HomeGroup Network Connections - Image advanced sharing options Image advanced sharing options Not connections - Image advanced sharing options Image advanced sharing options Image advanced sharing options - Not connections - Image advanced sharing options Image advanced sharing options Image advanced sharing options - Image advanced	Find a setting	∠ Ethernet	
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Related settings Change adapter options Ethernet Change adapter options Dial-up Network and Sharing Center VPN HomeGroup Network Connections Network Connections Network Connections Organize Blaetooth Network Connection Not connected Not conn	Status		
Ethernet Change advanced sharing options Dial-up VPN HomeGroup Network and Sharing Center Network Connections Network Connections Network Connections Network Connections Network Connections Network Connection Not connected Wi-Fi Diabled Realtek RTL872385 Wir Network RTL872385 Wir Craat Sheeren Properties Network RTL872385 Wir Network RTL872385	🕷 Wi-Fi	Related settings	ê
Dial-up Network and Sharing Center VPN HomeGroup Network Connections Image: Connection Search Network Connections Organize * Bluetooth Network Connection Organize * Bluetooth Network Connection Image: Connection Organize * Bluetooth Network Image: Connection Image: Connection	Ethernet	Change advanced sharing opt	tions
Bluetooth Network Organize * Image: Connections Image: Connections Wr.Fi Disabled Realtok RTL87238S Wir Wr.Fi Disabled Realtok RTL87238S Wir Image: Connections Disabled Realtok RTL87238S Wir Image: Connections Disabled Realtok RTL87238S Wir Image: Connections Disabled Realtok RTL87238S Wir	ື Dial-up	Network and Sharing Center	
Network Connections	8° VPN	HomeGroup	
↑ ● All Control Panel Items > Network Connections > ● ● Search Network Connections > ● ● Organize • ● ● ● ● ● ● ●	Vetwork Connections		- 🗆 X
Organize *	🛧 🛬 🔹 All Control Panel I	terns > Network Connections - U	Search Network Connections
Bluetooth Network Connection Image: Connection Ethernet Image: Connection Ethernet 2 Not connected DM9621A Disable Disable DM9621A USB To Fast . Win F1 Disabled Realtek RTL8723BS Wir Disable Disable DM9621A USB To Fast . Disabled Realtek RTL8723BS Wir Disable Disable Disable Image: Delina Delina Delina Delina Image: Delina Properties Delina Delina	Organize *		8 · 1 0
Wi-Fi Disabled Realtek RTL872385 Wir	Bluetooth Network Connection Not connected	Ethernet Unidentified network DM9621A	Ethernet 2 Network cable unplugg. DM9621A USB To Fast
 ♥ Bridge Connections Credit Shortoul ♥ Doting ♥ Rename ♥ Properties 	Wi-Fi Disabled Realtek RD 8723B5 Vi	Disable Status Diagnose	
© Delitics © Renume © Properties	(caror more 2002 f)	Bridge Connections Create Shortsuit	
Properties		😵 Delite 😵 Rename	
		Properties.	
	4 items		(E)

Roll down "The connection uses the following items:", will find Internet Protocol Version 4 (TCP/IPv4), then double click it.

Connect using:		
🚽 Realtek PCIe G	BE Family Controller	
		Configure
This connection uses	the following items:	
Gos Rock Mc File and Print Gos Packet Gos Packet Morosoft Ne Microsoft Ne Internet Prot Internet Prot	Scheduler Scheduler Col Version 4 (TCP/IP- twork Adapter Multiplex DP Protocol Driver ocol Version 6 (TCP/IP-	v6)
inet all	Uninstali	Properties
Deservetter		

Set IP address "172.0.0.XXX", Subnet mask "255.255.255,0", and click "OK"

seneral						
You can get IP settings a this capability. Otherwise for the appropriate IP se	assigned auti e, you need ettings.	omatically to ask you	if your r netw	ork	work su adminis	ipports trator
Obtain an IP addres	ss automatic	ally				
• Use the following IP	Paddress:	-			_	1
IP address:		172.	0.	0	. 100]
Subnet mask:						
Default gateway:					ē	1
Obtain DNS server	address auto	omatically				
• Use the following D	NS server ac	ddresses:				
Preferred DNS server:	:					I
Alternate DNS server:						1
	pon exit			ń	Advar	red

Download PuTTY from

https://drive.google.com/file/d/1SQJit7bIxUo9gMa0CC7ZH_zzCWhD6yoN/view?usp=s haring, after installation, open putty executed file.

理		
:) > Pro	gram Files > PuTTY	
* * * * *	 名稱 ☐ LICENCE pageant.exe plink.exe pscp.exe psftp.exe putty.chm putty.gen.exe puttygen.exe README.txt website]

Open PuTTY Session with IP ad	ddress 172.0.0.1
-------------------------------	------------------

🔀 PuTTY Configuratior		?	×
Category:			
Session Logging Terminal Revboard Bell Features Window Appearance Behaviour Translation Selection Colours	Basic options for yo Specify the destination you war HostName (or IP address) 172.0.1 Connection type: Raw Telnet Rk Load, save or delete a stored s Saved Sessions	our PuTTY session it to connect to Port 22 ogin SSH session	Serial
Connection → Data → Proxy → Telnet → Rlogin ⊕ SSH → Serial	Default Settings		oad ave elete
	Close window on exit Always Never	Only on clean exit	

The login user name and password default is root and 1234



And we go to location /mnt/mmc, this location is where the micro SD card located.

Syntax

root@USM-S62:~# cd /mnt/mmc

Display

root@USM-S62:~# cd /mnt/mmc root@USM-S62:/mnt/mmc#

Now let's executed edgex_installer.

Syntax

root@USM-S62: /mnt/mmc# ./edgex_installer

Display

root@USM-S62:/mnt/mmc# ./edgex installer 🗌

Final, it will display two tips to point out install finish.

root@USM-S62:/mnt/mmc# ./edgex .	installe	er	
/dev/pts/0			
Verifying archive integrity	100%	All	good.
Uncompressing edgex 100%			

3.2 Web-GUI

3.2.1 Login

Open your browser (Chrome/ IE/ Edge/ Firefox). Insert "172.0.0.1", this IP is USM-S62 Mask address.

5 1 🖾 新索引機業	× +	~								-	٥
$\leftrightarrow \circ \circ \circ$	172.0.0.1/								s∕≡	h	B
	http://17	2.0.0.1						網站			
	. <i>P</i> 172.0.0.1	1									
熱門網如	沾							12.403	e# 🛞		
	2	agoda	В.		f	in	9	MI			
新聞	0 Edge	Agoda	Booking.com	Microsoft Store	Facebook	Linkedin	LINE	PTT			
我的新聞	司總覧 /設	定內容偏好 武	漢肺炎(COVID-19)	疫情動態 編輯精選	娛樂 焦點新聞	台灣新聞 …	pow	ered by Microsol	ft News		
		-		-			6	12.85	AL.		
9.50 (PA) A2	LEF UF		100		和謝和弦離婚的	eanna畔7公斤			1		

The figure below is the Web-GUI default interface. Insert username and password, and click "Sign in".

	×	+ ~				-		×
\leftrightarrow \rightarrow \circlearrowright \textcircled{a}	① 172.0	0.1/cgi-bin/luci	0	☆	₹	h	Ø	
	1							
		USM-S62 : LEO-S Gateway						
		sername						
		Issword						
		Sign in						
			_					

Username: root Password:1234

3.2.2 Overview

This Web-GUI will contain four parts in each subject on the left side. And each subject has related configure options.

and the second sec		 10		-
USM-S62 : LEO-S Galeway				
0			^	2 3
System				
Model	USM-S62 1 FO-S Gateway			
Firmware Version	1.0.1			
Kernel Version	4.1.15			
Local Time	2020年6月31日 13.42.38			
Uptime	5m 35s			
Load Average	1 08, 0 07 0 37			
Memeory				
Total Available	367886 kB (508486 KB (72%)			
Гтев	324500 kB / 508488 kB (03%)			
Cached	48724 kB / 508459 kB (0%)			
Bullored	1636 KB / 508488 KB (0%)			

- A. Status
 - a. Overview
 - b. Backhaul



- B. Settings
 - a. Backhaul Network
 - b. DHCP Server
 - c. Configuration
 - d. Firmware upgrade
 - e. Reboot



- C. LoRa
 - a. Data and Charts
 - b. Management
 - c. LoRa Module F/W Upgrade
 - d. Node Import



D. Logout

3.2.3 Firmware Check & Update Method

3.2.3.1 USM-S62 Firmware Version Check

At first we get USM-S62 and Start Web-GUI we need to check USM-S62 Firmware version if it is newest.

There are two methods to check the firmware, one when you start Web-GUI and login default page. We will see "Firmware Version". Now is 1.0.2 (2020/9/9).

USM-S62 : LEO-S Gateway					
=					
0					
System					
Model	USM-S67 1 FO-S Gateway				
Firmware Version	1.0.1				
Kemel Version	4.1.15				
Local Time	2020年8月31日 13:42.36				
Uptime	5m 35s				
Load Average	1 68, 0 87, 0 37				

The other method is click "Status" option on the left side.

	× + ~
$\leftrightarrow \rightarrow \odot$ $$	172.0.0.1/cgi bin/luci/;stok=8a7a78bc138(2159aab14c5517)
	USM-S62 : LEO-S Gateway
I≣ Status	
I≣ Settings	
t≣ LoRa	0
t+ Logout	System
	Model
	Firmware Version
	Kernel Version

And click "Overview".

3M-S62 : LEO-S Gateway	
0	
0	
System	
Model	USM-S67 1 FO-S Gateway
Firmware Version	1.0.1
Kemel Version	4.1.15
Local Time	2020年8月31日 13.42.36
Uptime	5m 35s
Load Average	1 68, 0 87, 0 37

3.2.3.2 USM-S62 Firmware Update Method

If the device firmware is not the newest or have some critical fix of firmware need to update, the new firmware file will upload to google drive and let end user download (Need Advantech related personnel permission).

Choose Firmware Upgrade in Settings option.



And user will go to Firmware Upgrade page

Firmware Upgra	ade
File Name	ne.
File Size	
File Date	e -
Select File	Choose File No file chosen
	Upload

Then we can select firmware file in the "Select File" subject.

Firmware Upgra	de
File Name.	+
File Size:	-
File Date:	-
Select File:	Choose File No file chosen
_	I Upload

After you choose the firmware file that provide from Advantech, it will show file information on the page. Such as

- File Name
- File Size
- File Date

0	
Firmware Upgrad	de
File Name:	USM-S62_1.0.2_0_signed.img
File Size:	26,913,984
File Date:	2020/8/7 10:51:42
Select File:	Choose File USM-S62_1.0signed.img
	Upload

When you press Upload, the USM-S62 firmware will upgrade automatically. And the device will automatically reboot after upgrade.

3.2.3.3 LoRa Module Firmware Version Check

In this part we continue from the previous part, we need to check LoRa module firmware version next.

Let us check the left side of Web-GUI. There is an option named "LoRa"



Click "LoRa" option, it will show four options. Click "LoRa Module F/W Upgrade".



After click this option there will show an outline named "LoRa Module Firmware Management", and we can check the firmware version. Now is R1.5.13 (2020/9/9).

	USM-S62 : LEO-S Gateway
i≣ Status	≡ LoRa / LoRa Module F/W Upgrade
i≣ Settings	
🚍 LoRa	0
Data and Charts	LoRa Module Firmware Management
Management	Firmware Version: R1.5.13
LoRa Module F/W Upgrade	
Node Import	I Firmware Upload
🕩 Logout	

3.2.3.4 LoRa Module Firmware Update Method

If Lo-Ra module firmware is not the newest or have some critical fix of firmware need to update, the new firmware file will upload to google drive and let end user download (Need Advantech related personnel permission).

Click "LoRa" option, it will show four options. Click "LoRa Module F/W Upgrade".



User will go to Lo-Ra Module Firmware Management, and there is a button named "Firmware Upload"



When we choose Firmware Upload, this page will show the button to let us choose the file to upload.

0	
LoRa Module Firmwa	re Management
Firmware Version:	R1.5.13
Firmware	Choose File No file chosen
File Name:	•
File Size:	-
File Date:	-
	Upload

And after you choose the upload file this page will show this file information.

- File Name
- File Size
- File Date

0	
LoRa Module Firmwar	re Management
Firmware Version:	R1.5.13
Firmware:	Choose File LG1000M_R1904a7 bin
File Name:	LG1000M_R1513_62a789fb_dfe904a7.bi
File Size:	138,036
File Date:	2020/7/2 16:56:43

Press Upload button, then press Upgrade, USM-S62 will upgrade Lo-Ra module's firmware automatically.

0	
LoRa Module Firmwar	e Management
Firmware Version:	R1.5.13
Firmware:	Choose File LG1000M_R1. 904a7.bin
File Name:	LG1000M_R1513_62a789fb_dfe904a7.bin
File Size:	138,036
File Date:	2020/7/2 16:56:43
	(Constant)
LoRa / LoRa Module F/W (Jpgrade
LoRa / LoRa Module F/W U	Jpgrade
LoRa / LoRa Module F/W U ORa Module Firmwa	Jpgrade re Management
LoRa / LoRa Module F/W U .oRa Module Firmwa Firmware Version:	Jpgrade re Management R1.5.13
LoRa / LoRa Module F/W U DoRa Module Firmwa Firmware Version: New Firmware Version:	Jpgrade re Management R1.5.13 R1.5.13
LoRa / LoRa Module F/W U DORa Module Firmwa Firmware Version: New Firmware Version: New Firmware Checksum:	Jpgrade re Management R1.5.13 R1.5.13 ec9d9f74db7f892b79364f8fe7a04aed

After upgrade firmware this page will shows that checksum verification is "OK", and the new firmware version. Just press "Done".

lpgrade
re Managemen
ок
R1.5.13
Done.

3.2.4 USM-S62 Change Network ID (Unavailable feature)

If customer have two or more gateways and each gateway manage different set of TREK-120G2, then we will need to know how to configure Lo-Ra Module Setting.



As the figure above, if we don't want Set A data connect to the USM-S62 on the right side, all we need to do is change the Network ID in the Lo-Ra Gateway page from Lo-Ra management.____



 In Colabase

 In Colabase

 Manager 1D
 Action

 Manager 1D
 Action

 Office Manager

 Office Manager

 Office Manager

 Colspan="2">Colspan="2"

 Colspan="2"
 Colspan="2"
 Colspan="2"
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 <th colspan="2"</

When we scrolling down the page, there is a "Database" subject.

And we will also see a gear sign click the gear, and press "Edit". We can change Network ID from this page

Overview			
LoRa	Gateway EUI	6095CEFFFF5003B1.	
LoR	a Module EUI	-	
	Region	TW	
WISE Link			
WISE Link	Beacon	Downlink Uplink	Miscellaneous
WISE Link	Beacon Beacon	Downlink Uplink	Miscellaneous
WISE Link	Beacon Beacon Network ID	Downlink Uplink On 2395	Miscellaneous

 (\mathbf{I})

(!

TREK-120G2 also have own Network ID, gateway Network ID must as same as TREK-120G2. It will never connect if the ID is not the same.

Now stage Advantech didn't allow customer to change their Network ID of TREK-120G2

3.2.5 Insert Node List

If we need to connect both TREK-120G2 and USM-S62. USM-S62 must insert node list which content the TREK-120G2 ID we're going to connect. This node list format can download from <u>https://drive.google.com/file/d/1hPuointaZigjkSbuSWe2poBvZBG47va/</u> view?usp=sharing After we prepared node list, now we're going to insert it to USM-S62. Click "LoRa" option.



Click "Node Import"



And it will show "Import" outline at right side.

0		
Import		
	Template:	Node.json
	File Name:	÷.
	File Size:	-
	File Date:	÷
	Overwrite:	
	Import:	Choose File No file choser

Click "Choose File", choose the node list file where you download. This file must be ".json" file type.

⑤ 開啟						×
- T 💄	« USM-S62 ≯ n	ode list	~ U	搜尋 node list		Q
組合管理 • 新增	資料夾					?
 ★ 快速存取 Desktop OneDrive 下載 下載 図片 Download Outlook SOP 	*****	名稱 120G2_DVT_N 120G2_DVT2	Node_List (all).json _Node_List.json		~	
	檔案名稱(N):		~	All Files (*.*)		\sim
				開啟(O)	取消	

If you have previous node list inside your USM-S62, and we wish to keep that list inside, after choose file do not check "Overwrite" option, just click "Append"

Import		
	Template:	Node.json
	File Name:	120G2_DVT2_Node_List.json
	File Size:	7,717
	File Date:	2020/8/26 15:42:32
	Overwrite:	
	Import:	Choose File 120G2_DVT2List.json
		Append

If we want to update whole node list, please check the "Overwrite" option, and click "Overwrite".

Import		
	Template:	Node.json
	File Name:	120G2_DVT2_Node_List.json
	File Size:	7,717
	File Date:	2020/8/26 15:42:32
	Overwrite:	
	Import:	Choose File 120G2_DVT2List.json
		Overwrite

Every time we change the configuration of Lo-Ra, Web-GUI will return back to LoRa/Management page, and we must reboot the LoRa module.

tatus						
 racords per page 						
Element	D	Status	Data	Timestamp	Timer	Action
WISE Manager	00112358	2	-		-	Ċ
LoRa Gateway	6095CEFFF5003B1	2	(#)	-	-	٥

3.2.6 TREK-120 Connection Confirm

After reboot and login, go to LoRa/Management page, and roll the script down will show us all LoRa node we insert to USM-S62.

11	Device EUI	App EUI	Class	Activation	Remark	Action
1	EE0000000000001	0012020000000000	A	ΟΤΑΑ	120G2_DVT2_2994	٥
2	EE000000E0342982	001202000000000	A	OTAA	120G2_DVT2_2982	٥
3	EE000000E0342983	001202000000000	A	OTAA	120G2_DVT2_2983	٥
4	EE000000E0342984	001202000000000	A	OTAA	120G2 DVT2 2984	0

And wait 3~5 minutes, we will see the TREK-120G2 status below "Status" outline.

 records per page 					Search:	
Element	ID	Status	Data	Timestamp	Timer	Action
WISE Manager	00112358	2	-			Ċ
LoRa Gateway	6095CEFFFF5003B1	2		-	-	¢
LoRa Node	EE000000E0344525	2	-108 dBm / 3 dB	2020/9/9 12:37:26	10s	•

3.2.7 Cellular Network Setting (LTE version) 3.2.8 Wi-Fi Network Setting (WLAN version) 3.3 LEO-S TREK-120G2 Configuration Tool (Need TREK-120-ANR) TREK-120G2 is wireless sensor with NFC feature, and we use configuration tool to set our TREK-120G2 and upload data backup data to WISE-PaaS.

Connect NFC reader to your laptop or personal computer with Windows OS.

Unzip "LeoSetting Tool 1.1.8.zip" (or later version), and open the folder, executed "LeoSettingTool.exe".



When the tool be executed will auto connect to COM port of NFC reader.

asic Settings	basic Setting	S TREK-120G2		Detect Sensor
Sensor Data	Basic Informat	tion	Function Settings	
	Device ID	EE000000E0344498	Record Interval	10 Min.
	APP ID	0012020000000000	Loop Recording	• Off
	Network ID	2395		
	FW Version	R1.1.13 TW 171442dc		
	Sensor Mode	Ready		
	Battery Voltage	3.05 V		
ish ~				
nnected Port			Import Export Sto	P
COM33			Save to Sensor Factory	Reset

Put your TREK-120G2 on the reader, please make sure both "NFC mark" is aligned.



Click "Detect Sensor" on the upper right corner. After click the tool will show "Sensor detected, downloading information…", after downloading this message will disappear automatically, please don't click the "skip" button.

Settings	Basic Setting	S TREK-120G2		Detect Senso
or Data	Basic Informa	tion	Function Settings	
	Device ID	EE000000E0344498	Record Interval	10 Min.
	APP ID	0012020000000000	Loop Recording	Off
	Network ID	2395		
	FW Version	R1.1.13 TW 171442dc		
	Sensor Mode	Ready		
	Battery Voltage	3.05 V		
~				
A MARGANIA			Import Export St	OD
ected Port			Save to Sensor Factor	Reset
		Sensor detected, downloadir	ng information 32q.	
		Sensor detected, downloadir	ng information Step.	
		Sensor detected, downloadir	ng Information Sap	
		Sensor detected, downloadir	ng information ⊐aņ	
		Sensor detected, downloadir	ng Information	

When finished detecting, this tool will show sensor's information and function settings.

Basic Settin	GS TREK-120G2		Detect Senso
nsor Data Basic Inform	ation	Function Settings	
Device ID	EE000000E0344498	Record Interval	10 Min.
APP ID	0012020000000000	Loop Recording	• Off
Network ID	2395		
FW Version	R1.1.13 TW 171442dc		
Sensor Mode	Ready		
Battery Voltage	3.05 V		
nected Port		Import Export Stop	p
01/22		Save to Sensor Factory	Reset

Basic informati	on
Device ID	This ID present sensor 's ID, each sensor have
	their own ID, and user can distinguish them with
	last 4 numbers.
APP ID	This ID can identify sensor type.
Network ID	Network name of gateway and sensor.
FW Version	This will show firmware version of this TREK-
	120G2
Sensor Mode	There are 3 modes of this Sensor mode information
	1. Off: Factory default, in this mode user can't start
	Sensor.
	2. Ready: In this mode, Sensor is Power On, but in
	sleep status.
	3. Running: Sensor is start and recording.
	XAfter change Sensor Mode must detect again to check
	the sensor mode is change or not.
Battery Voltage	Show sensor's battery voltage.

Function Settings	
Record Interval	To set transmitting time between each data.
Loop Recording	Repeat to record data

3.3.1 Basic Settings

When click "Export", this tool can save Function Settings of this TREK-120G2.

Advantech LEO Setting Tool - 1	.1.8.0			- 🗆 X
AD\ANTECH Basic Settings	Basic Setting	S TREK-120G2		Detect Sensor
Sensor Data	Basic Information	tion	Function Settings	
	Device ID	EE000000E0344498	Record Interval	10 Min.
	APP ID	0012020000000000	Loop Recording	• Off
	Network ID	2395		
	FW Version	R1.1.13 TW 171442dc		
	Sensor Mode	Ready		
	Battery Voltage	3.05 V		
English				
Connected Port			Import Export Ste	p
COM33			Save to Sensor Factory	Reset

Next time if user need previous setting, you can click "Import" and choose the ".ini" file which we export and save in our computer.

Advantech LEO Setting Tool - 1.1	1.8.0			- 🗆 X
	Basic Setting	S TREK-120G2		Detect Sensor
Sensor Data	Basic Informa	tion	Function Settings	
	Device ID	EE000000E0344498	Record Interval	10 Min.
	APP ID	0012020000000000	Loop Recording	Off
	Network ID	2395		
	FW Version	R1.1.13 TW 171442dc		
	Sensor Mode	Ready		
	Battery Voltage	3.05 V		
English 🗸				
Connected Port			Import Export Sto	q
COM33			Save to Sensor Factory	Reset

Every time you change "Function Settings" or "Import" function setting user must click "Save to Sensor" to save the setting in to TREK-120G2.

Advantech LEO Setting Tool -	1.1.8.0			- 🗆 X
	Basic Setting	S TREK-120G2		Detect Sensor
Sensor Data	Basic Informat	tion	Function Settings	
	Device ID	EE000000E0344498	Record Interval	10 Min.
	APP ID	0012020000000000	Loop Recording	• Off
	Network ID	2395		
	FW Version	R1.1.13 TW 171442dc		
	Sensor Mode	Ready		
	Battery Voltage	3.05 V		
English 🗸				
Connected Port			Import Export Ste	p
COM33			Save to Sensor Factory	Reset

When we need to stop TREK-120G2, user can stop the device through click "Stop" button. After click "Detect Sensor" again, and check "Sensor Mode", will change Running mode to Ready mode.

ADIANTECH	Basic Setting	S TREK-120G2		Detect Sensor
Basic Settings Sensor Data	Basic Informa	tion	Function	7
	Device ID APP ID	EE000000E0344498 0012020000000000	Record Interval	10 Min.
	Network ID FW Version Sensor Mode	2395 R1.1.13 TW 171 12dc Ready		
	Battery Voltage	3.05 V		
English v				
Connected Port			Import Export Sto	p
COM33			Save to Sensor Factory	Reset

3.3.2 Sensor Data

Put TREK-120G2 on NFC reader, and click "Sensor Data" on the upper of left

Advantech LEO Setting Tool - 1	1.1.8.0			- 🗆 X
AD\ANTECH	Basic Setting	S TREK-120G2		Detect Sensor
Sensor Data	Basic Informat	tion	Function Settings	
	Device ID	EE000000E0344498	Record Interval	10 Min.
	APP ID	0012020000000000	Loop Recording	Off
	Network ID	2395		
	FW Version	R1.1.13 TW 171442dc		
	Sensor Mode	Ready		
	Battery Voltage	3.05 V		
English				
Connected Port			Import Export Sto	P
COM33			Save to Sensor Factory	Reset

Into Sensor Data interface, user will see "Upload", "Export", "Clean" and "Detect Sensor", at the upper of right side.

Sensor	Data TREK-	120G2	Upload	Export	Clean	Detect Sensor
Number	DateTime	Humidity	Tempe	rature	Ba	ttery
0	1970/01/01 07:59:59	-0.01%	-0.01°C		V00.0	
1	1970/01/01 07:59:59	-0.01%	-0.01°C		0.00V	
2	1970/01/01 07:59:59	-0.01%	-0.01°C		V00.0	
3	1970/01/01 07:59:59	-0.01%	-0.01°C		0.00V	
4	1970/01/01 07:59:59	-0.01%	-0.01°C		V00.0	
5	1970/01/01 07:59:59	-0.01%	-0.01°C		0.00V	
6	1970/01/01 07:59:59	-0.01%	-0.01°C		V00.0	
7	1970/01/01 07:59:59	-0.01%	-0.01°C		V00.0	
8	1970/01/01 07:59:59	-0.01%	-0.01°C		V00.0	
9	1970/01/01 07:59:59	-0.01%	-0.01°C		0.00V	
10	1970/01/01 07:59:59	-0.01%	-0.01°C		V00.0	
11	1970/01/01 07:59:59	-0.01%	-0.01°C		0.00V	
12	1970/01/01 07:59:59	-0.01%	-0.01°C		V00.0	
13	1970/01/01 07:59:59	-0.01%	-0.01°C		V00.0	
14	1970/01/01 07:59:59	-0.01%	-0.01°C		V00.0	
15	1970/01/01 07:59:59	-0.01%	-0.01°C		V00.0	
16	1970/01/01 07:59:59	-0.01%	-0.01°C		V00.0	
17	1970/01/01 07:59:59	-0.01%	-0.01°C		V00.0	
18	1970/01/01 07:59:59	-0.01%	-0.01°C		V00.0	
19	1970/01/01 07:59:59	-0.01%	-0.01°C		V00.0	
20	1970/01/01 07:59:59	-0.01%	-0.01°C		V00.0	
21	1970/01/01 07:59:59	-0.01%	-0.01°C		0.00V	
22	1070/01/01 07-50-50	0.01%	0.01%		0.001/	

Click "Detect Sensor", the tool will start to download data in TREK-120G2. It'll take few seconds.



After download the blank space will show all data (5000 records) in TREK-120G2.

Sensor	Data TREK-	120G2	Upload Expor	t Clean Detect	Sens
Number	DateTime	Humidity	Temperature	Battery	_
0	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
1	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
2	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
3	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
4	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
5	1970/01/01 07:59:59	-0.01%	-0.01°C	V00.0	
6	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
7	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
8	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
9	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
10	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
11	1970/01/01 07:59:59	-0.01%	-0.01°C	V00.0	
12	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
13	1970/01/01 07:59:59	-0.01%	-0.01°C	V00.0	
14	1970/01/01 07:59:59	-0.01%	-0.01°C	V00.0	
15	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
16	1970/01/01 07:59:59	-0.01%	-0.01°C	V00.0	
17	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
18	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
19	1970/01/01 07:59:59	-0.01%	-0.01°C	V00.0	
20	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
21	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
22	1070/01/01 07-50-50	0.01%	0.01%	0.001/	

Sensor	Data TREK-	120G2	Upload Export	Clean Detect	Sensor
Number	DateTime	Humidity	Temperature	Battery	^
0	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	_
1	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
2	1970/01/01 07:59:59	-0.01%	-0.01°C	V00.0	
3	1970/01/01 07:59:59	-0.01%	-0.01°C	V00.0	
4	1970/01/01 07:59:59	-0.01%	-0.01°C	V00.0	
5	1970/01/01 07:59:59	-0.01%	-0.01°C	V00.0	
6	1970/01/01 07:59:59	-0.01%	-0.01°C	V00.0	
7	1970/01/01 07:59:59	-0.01%	-0.01°C	V00.0	
8	1970/01/01 07:59:59	-0.01%	-0.01°C	V00.0	
9	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
10	1970/01/01 07:59:59	-0.01%	-0.01°C	V00.0	
11	1970/01/01 07:59:59	-0.01%	-0.01°C	V00.0	
12	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
13	1970/01/01 07:59:59	-0.01%	-0.01°C	V00.0	
14	1970/01/01 07:59:59	-0.01%	-0.01°C	V00.0	
15	1970/01/01 07:59:59	-0.01%	-0.01°C	V00.0	
16	1970/01/01 07:59:59	-0.01%	-0.01°C	V00.0	
17	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
18	1970/01/01 07:59:59	-0.01%	-0.01°C	V00.0	
19	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
20	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
21	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
22	1070/01/01 07-50-50	0.01%	0.01°C	0.001/	Y

After detect sensor, you can click "Export" to make these data into .csv file and save it to where user wish to store.



And final you will get an excel report.

	Carlor In						test	.csv - Excel						1991	- 0	×
相实	常用 損人	版面配置	公式 1	19 QU	植祝	百度网合		(action)	TROUNT					Br	uce1.Lin	月 .共用
10	が、 研想明瞭 時、 男人以下	* 1	2 - A A	-	- W.		8用結式 1、16、1	*** .70 H	定格式化 格	式化為 保存	人族皆	- Σ - 	27 日序向新闻 1	PEN R	8 存到	
-			- TE					00 #B	的條件- 3	数格・ 様式	- (約) 检究		-	創取- 百度	e (77) (Sk	
S\$1.903	u 9	玉田			3月75天	G.,	No.01	1.	10	34	0619.0		19 H	e	HB	1
A1	X	- fr	Senso	r Device I	D											
1	A B	c	D	E	F	G	н	1	J	к	L	м	N	0	Р	(
1 5	ensor De EE000000E	0344498						1							-	
2 0	enerate 1########															
3 N	lumber DateTime H	Iumidity(T	'emperatu E	Battery(V)												
4	0 #######	-0.01	-0.01	0												
5	1 ########	-0.01	-0.01	0												
6	2 ########	-0.01	-0.01	0												
7	3 ########	-0.01	-0.01	0												
8	4 ########	-0.01	-0.01	0												
9	5 ########	-0.01	-0.01	0												
10	6 #######	-0.01	-0.01	0												
11	7 #########	-0.01	-0.01	0												
12	8 ########	-0.01	-0.01	0												
13	9 ########	-0.01	-0.01	0												
14	10 ########	-0.01	-0.01	0												
15	11 ########	-0.01	-0.01	0												
16	12 ########	-0.01	-0.01	0												
17	13 ########	-0.01	-0.01	0												
18	14 #########	-0.01	-0.01	0												
19	15 ########	-0.01	-0.01	0												
20	16 ########	-0.01	-0.01	0												
21	17 ########	-0.01	-0.01	0												
22	18 ########	-0.01	-0.01	0												
23	19 ########	-0.01	-0.01	0												
30	m anageren	0.01	0.03	0		1				_						
	1951 (+)									91		-	-	-		

Microsoft Excel might show ##### in cells when a column isn't wide enough to show all of the cell contents. Formulas that return dates and times as negative values can also show as #####.

To make a column wider to show cell contents in full, double-click the right edge of the column header, or drag it to the width you want.

3.3.3 Upload backup data to Dash board

Under certain circumstances, Gateway LoRa module might loss signal and can't receive data from TREK-120G2, so we made an "Upload" function for TREK-120G2 to make up WISE-PaaS missing data.

Sensor	Data TREK-	120G2	Upload Expor	t Clean Detec	t Sensor
Number	DateTime	Humidity	Temperature	e Battery	^
4978	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
4979	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
4980	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
4981	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
4982	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
4983	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
4984	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
4985	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
4986	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
4987	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
4988	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V	
4989	1970/01/01 08:00:00	59.49%	24.48°C	3.22V	
4990	1970/01/01 08:10:00	64.88%	24.46°C	3.22V	
4991	1970/01/01 08:19:18	56.67%	24.98°C	3.20V	
4992	1970/01/01 08:29:19	57.28%	24.71°C	3.20V	
4993	1970/01/01 08:39:20	57.47%	24.65°C	3.13V	
4994	1970/01/01 08:49:20	56.62%	24.94°C	3.08V	
4995	1970/01/02 03:49:13	57.69%	25.5°C	2.92V	
4996	1970/01/02 03:50:13	63.45%	25.59°C	2.92V	
4997	1970/01/02 03:59:35	118.99%	40.32°C	2.93V	
4998	2020/09/01 09:33:34	55.69%	26.31°C	2.93V	
4999	2020/09/01 10:03:18	50.67%	27.47°C	2.93V	

Open your Setting Tool, and turn to "Sensor Data" page.

In this example, 2020/09/01 10:03:18 this data stored in sensor when gateway didn't power on. So it didn't upload to WISE-PaaS. And if you click "Upload" then you can make up this data to WISE-PaaS directly without gateway.

Sensor	Data TREK-	120G2	Upload Export	Clean Detect Sens
Number	DateTime	Humidity	Temperature	Battery
4978	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V
4979	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V
4980	1970/01/01 07:59:59	-0.01%	-0.01°C	V00.0
4981	1970/01/01 07:59:59	-0.01%	-0.01°C	V00.0
4982	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V
4983	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V
4984	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V
4985	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V
4986	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V
4987	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V
4988	1970/01/01 07:59:59	-0.01%	-0.01°C	0.00V
4989	1970/01/01 08:00:00	59.49%	24.48°C	3.22V
4990	1970/01/01 08:10:00	64.88%	24.46°C	3.22V
4991	1970/01/01 08:19:18	56.67%	24.98°C	3.20V
4992	1970/01/01 08:29:19	57.28%	24.71°C	3.20V
4993	1970/01/01 08:39:20	57.47%	24.65°C	3.13V
4994	1970/01/01 08:49:20	56.62%	24.94°C	3.08V
4995	1970/01/02 03:49:13	57.69%	25.5°C	2.92V
4996	1970/01/02 03:50:13	63.45%	25.59°C	2.92V
4997	1970/01/02 03:59:35	118.99%	40.32°C	2.93V
4998	2020/09/01 09:33:34	55.69%	26.31°C	2.93V
4999	2020/09/01 10:03:18	50.67%	27.47°C	2.93V

	UC > PUC-SUDA	•						0 2020-09-01 09.4		10.02.00
35 °C					Average Te	emperature				
30 °C —										
25 °C										
20 °C —	2020-09-01 09:40:52 一林口TEST: 26.31 °	2 °C								
15 °C	09:42	09:44	09:46	09:48	09:50	09:52	09:54	09:56	09:58	10:00

- 3.3.4 WISE-PaaS Setting 3.4 WISE-PaaS Dashboard Demo

Federal Communication Commission Interference Statement

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.

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 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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 20cm between the radiator & your body.