

ICE400160-MODEM  
4G Modem  
**User Manual**

**About This Document**

This document provides the software function of the 4G Modem ICE400160-MODEM embedded in the ICE cleaner.

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## Important Notice

Due to the nature of wireless communications, transmission and reception of data can never be guaranteed. Data may be delayed, corrupted (i.e., have errors) or be totally lost.

Although significant delays or losses of data are rare when wireless devices such as the modem is used in a normal manner with a well-constructed network, the modem should not be used in situations where failure to transmit or receive data could result in damage of any kind to the user or any other party, including but not limited to personal injury, death, or loss of property. ICE Robotics EMEA accepts no responsibility for damages of any kind resulting from delays or errors in data transmitted or received using the modem, or for failure of the modem to transmit or receive such data.

## Safety Precautions

### General

- The modem generates radio frequency (RF) power. When using the modem, care must be taken on safety issues related to RF interference as well as regulations of RF equipment.
- Do not use your modem in aircraft, hospitals, petrol stations or in places where using cellular products is prohibited.
- Be sure that the modem will not be interfering with nearby equipment. For example: pacemakers or medical equipment. The antenna of the modem should be away from computers, office equipment, home appliance, etc.
- An external antenna must be connected to the modem for proper operation. Only uses approved antenna with the modem. Please contact authorized distributor on finding an approved antenna.
- Always keep the antenna with minimum safety distance of 20 cm or more from human body. Do not put the antenna inside metallic box, containers, etc.

## Protecting Your Modem

To ensure error-free usage, please install and operate your modem with care. Do remember the following:

- Do not expose the modem to extreme conditions such as high humidity / rain, high temperature, direct sunlight, caustic / harsh chemicals, dust, or water.
- Do not try to disassemble or modify the modem. There is no user serviceable part inside and the warranty would be void.
- Do not drop, hit or shake the modem. Do not use the modem under extreme vibrating conditions.
- Do not pull the antenna or power supply cable. Attach/detach by holding the connector.
- Connect the modem only according to the instruction manual. Failure to do it will void the warranty.
- In case of problem, please contact authorized distributor.

### FCC Statements

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. (2) This device must accept any interference received, including interference that may cause undesired operation.

This device 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.

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

### CE Statements

EU Regulatory Conformance

We, "ICE Robotics EMEA", hereby declare that this device is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU



### RF 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 and your body.

Note: This product can be used in EU countries without any restrictions.

**Regulatory and Type Approval Information**

**Table 1: Directives**

2011/65/EU	<p>The European RoHS2.0 2011/65/EU Directive was issued by the European parliament and the European Council on 1 July 2011 on the restriction of the use of certain Hazardous substances in electrical and electronic equipment.</p> 
	<p>On June 4, 2015, the Official Journal of the European Union published the RoHS2.0 Amendment Directive (EU)                  In 2015/863, four phthalates (DEHP, BBP, DBP, DIBP) were officially included in the list of restricted substances in Appendix II of RoHS 2.0 (2011/65/EU).                  From July 22, 2019, all electronic and electrical products exported to Europe (except medical and monitoring equipment) must meet this restriction; from July 22, 2021, medical equipment and monitoring equipment will also be included in the scope of control.</p>
2012/19/EU	<p>The European WEEE 2012/19/EU Directive was issued by the European parliament and the European Council on 24 July 2012 on waste electrical and electronic equipment</p> 
2013/56/EU	<p>The European 2013/56/EU Directive is a battery Directive which published in the EU official gazette on 10 December 2013. The button battery used in this product conforms to the standard of 2013/56/EU directive.</p>

**Table 2: Toxic or Hazardous Substances or Elements with Defined Concentration Limits**

Name of the Part	Hazardous Substances									
	(Pb)	(Hg)	(Cd)	(Cr(VI))	(PBB)	(PBD E)	(DEHP)	(BBP)	(DBP)	(DIBP)
Metal parts	0	0	0	0	-	-	-	-	-	-
Circuit modules	0	0	0	0	0	0	0	0	0	0
Cables and cable assemblies	0	0	0	0	0	0	0	0	0	0
Plastic and polymeric parts	0	0	0	0	0	0	0	0	0	0

O:

Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in RoHS2.0.

X:

Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials for this part *might exceed* the limit requirement in RoHS2.0.

-:

Indicates that it does not contain the toxic or hazardous substance.

## Chapter 1 Product Overview

### 1.1 Key Features

The ICE400160-MODEM by ICE Robotics EMEA is an industrial 4G model. It meets ordinary industrial-grade application sites through enhanced EMC design and structural design.

The ICE400160-MODEM product (also known as 4G cellular modem) is embedded in the ICE cleaning machine. Through the agreed communication protocol, the communication board module collects information such as the working time and battery capacity of the cleaning machine, and uploads it to the ICE platform through the 4G wireless network. The ICE platform can manage ICE cleaners and related customer information and equipment materials.

### 1.2 Key Features

#### Kernel Parameters

- CPU: NUC976, maximum is up to 300MHz
- FLASH: 32M Byte, SPI FLASH
- DDR2: Built-in CPU, rate 150MHz, capacity 64MB
- Support modules: EG25-G, EC20
- Hardware version: 4.3
- Software version: 1.0.10

#### Cellular Interface

- Number of antennas: 1
- Connector: SMA-K
- SIM: 1 (3.0 V / 1.8 V), compatible with eSIM card
- Support modules: EG25-G, EC20
- Frequency bands: LTE FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B20/B25/B26/B28  
 LTE TDD: B41  
 WCDMA: B1/B2/B5/B8  
 GSM: B2/B3/B5/B8
- Output power: Class 3 (23.5dBm +2/-3dB) for LTE FDD bands  
 Class 3 (23.5dBm +2/-3dB) for LTE TDD bands  
 Class 3 (23.5dBm+2/-3dB) for WCDMA bands

Class E2 (27dBm±3dB) for EGSM850/900 8-PSK  
Class E2 (25dBm±3dB) for DCS1800/1900 8-PSK  
Class 4 (33dBm±2dB) for EGSM850/900  
Class 1 (31dBm±2dB) for DCS1800/1900

### WLAN Interface

- Number of antennas: 1
- Connector: RP-SMA-K
- Standards: 802.11b/g/n, supports STA modes
- Frequency bands: 2.412-2.472 GHz for Europe, 2.412-2.462 GHz for North America (2.4 GHz ISM band)
- Data speed: Max 24.8Mbps UDP && 15.8Mbps TCP / IP
- Number of channels: 11 for North America, 13 for Europe
- Max. RF Output Power: Less than 20dBm for North America, 20dBm for Europe.

### R232 Serial Port

- Quantity and Data speed: 1 x Maximum speed is up to 115200bps
- Socket form: Socket Molex559592430
- Magnet isolation protection: Air ± 8kV, contact 4kV
- Signal definition: 18 : TXD 20 : RXD

### R485 Serial Port

- Quantity and Data speed: 1 x Maximum speed is up to 115200bps
- Socket form: Socket Molex559592430
- Magnet isolation protection: Air ± 8kV, contact 4kV
- Signal definition: 3: VIN 7: GND 22: RS485-B 24: RS485-A

### DI Interface

- Socket form: Socket Molex559592430;
- Signal definition: 21 : DI 23 : DI

### CAN Serial Port

- Socket form: Socket Molex559592430
- Magnet isolation protection: Air ± 8kV, contact 4kV
- Signal definition: 5 : CANH 6 : CANL

### I2C Serial Port

- Quantity and Data speed: 1 x Maximum speed is up to 1Mbps
- Socket form: Socket Molex559592430
- Signal definition: 12: I2C\_DATA 14: I2C\_CLK

**Positioning**

- Support mode: GPS; Galileo; BDS
- Positioning sensitivity: -145 Bm
- Horizontal positioning accuracy: 2.5 meters
- Antenna configuration: 1 \* SMA-K external antenna interface

**Power Supply and Consumption**

- Power supply: DC power supply
- Input voltage: Min 12 to max 48V DC
- Power interface form: Socket Molex559592430;
- Signal definition: 2 : VIN- 4 : VIN +
- Protection function: Overcurrent protection; overvoltage protection
- Magnet isolation protection: Air 8kV, contact 4kV
- Power consumption: Maximum is 10 W
- Power switch button type: No switch

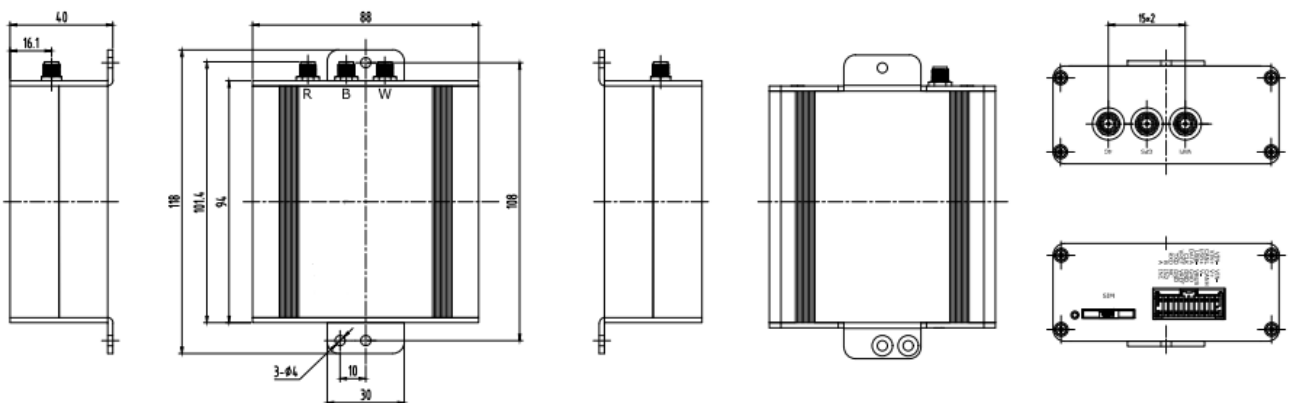
**Physical Characteristics**

- Ingress protection: IP30
- Housing : Aluminum shell
- Weight: 256g
- Dimensions: 88 x 118 x 40 mm
- Installations: Wall mounting

**Operating Environment**

- Operating Temperature: -20 to +60 °C
- Storage Temperature : -40 to +85 °C
- Relative Humidity: 5 to 95% RH

**1.3 Dimensions**



Right View

Front View

Left View

Rear View

Top&Bottom View



## Chapter 2 Configuration

The specific explanation of each parameter item is as follows:

Automatic APN Selection	Click the toggle button to enable/disable the automatic selection of APN option. After turning on the automatic selection of APN, the device will automatically obtain the APN of the current network without manual input; after turning off this function, you need to manually add the APN.	ON
APN	Enter the access point for the cellular dial-up connection provided by the local Internet service provider.	internet
Username	Enter the username for the cellular dial-up connection provided by the local Internet service provider.	Null
Password	Enter the password for the cellular dial-up connection provided by the local Internet service provider.	Null
Dialup Number	Enter the network dial-up number provided by the local operator.	*99***1#
Authentication Type	Select from "Auto", "PAP" or "CHAP" according to your local ISP.	Auto

## Chapter 3 Status

System Information	
Item	Description
Device Model	Show the model of the device.
System Uptime	Show the working time from the start of the system to the current time.
System Time	Show the current system time.
RAM Usage	Show the current memory usage and total memory capacity.
Firmware Version	Show the current firmware version.
Hardware Version	Show the current hardware version.
Kernel Version	Show the current kernel version.
Serial Number	Show the factory serial number of the router, and the factory time and other information of the router can be obtained from the serial number.

Internet Status	
Item	Description
Active Link	Show the currently online link: WWAN1 or WLAN.
Uptime	Show the current amount of time the link has been connected.
IP Address	Show the IP address of current link.
Gateway	Show the gateway of the current link.
DNS	Show the current DNS server.

LAN Status	
Item	Description
IP Address	Show the IP address and the Netmask of the router.
MAC Address	Show the MAC address of the router.

## Chapter 4 Interface Management

Link Manager (WLAN)		
Item	Description	Default
<b>General Setting</b>		
Index	Indicate the ordinal of the list.	--
Type	Show the type of the link.	WWAN1
Description	Enter a description for this link, it can be null.	Null
<b>Setting</b>		
Automatic APN Selection	Click the toggle button to enable/disable the “Automatic APN Selection” option. After enabling, the device will recognize the access point name automatically. Alternatively, you can disable this option and manually add the access point name.	ON
APN	Enter the Access Point Name for cellular dial-up connection, provided by local ISP.	internet
Username	Enter the username for cellular dial-up connection, provided by local ISP.	Null
Password	Enter the password for cellular dial-up connection, provided by local ISP.	Null
Dialup Number	Enter the dialup number for cellular dial-up connection, provided by local ISP.	*99***1#
Authentication Type	Select from “Auto”, “PAP” or “CHAP” as the local ISP required.	Auto

<b>Link Manager (WLAN)</b>		
<b>Item</b>	<b>Description</b>	<b>Default</b>
Data Allowance	Set the monthly data traffic limitation. The system will record the data traffic statistics when data traffic limitation (MiB) is specified. The traffic record will be displayed in <b>Interface &gt; Link Manager &gt; Status &gt; WWAN Data Usage Statistics</b> . 0 means disable data traffic record.	15360
Billing Day	Specify the monthly billing day. The data traffic statistics will be recalculated from that day.	1
<b>Ping Detection Setting</b>		
Enable	Click the toggle button to enable/disable the ping detection mechanism, a keep-alive policy of the router.	ON
Primary Server	Router will ping this primary address/domain name to check that if the current IP connectivity is active.	8.8.8.8
Secondly Server	Router will ping this secondary address/domain name to check that if the current IP connectivity is active.	114.114.114.114
Interval	Set the ping interval, measured in seconds	300
Retry Interval	Set the ping retry interval. When ping failed, the router will ping again every retry interval.	5
Timeout	Set the ping timeout, measured in seconds.	3
Max Ping Tries	Set the max ping tries. Switch to another link or take emergency action if the max continuous ping tries reached.	3
<b>Advanced Setting</b>		
Nat Enable	Click the toggle button to enable/disable the NAT functions. NAT is Network Address Translation option.	ON
Upload Bandwidth	Set the upload bandwidth used for QoS, measured in kbps.	10000
Download Bandwidth	Set the download bandwidth used for QoS, measured in kbps.	10000
Override Primary DNS	Defines the primary DNS server assigned by the DHCP server to the client.	Null
Override Secondly DNS	Defines the Secondary DNS server assigned by the DHCP server to the client.	Null
Debug Enable	Click the toggle button to enable/disable this option. Enable for debugging information output.	ON
Verbose Debug Enable	Click the toggle button to enable/disable this option. Enable for verbose debugging information output.	OFF

<b>Link Settings (WLAN)</b>		
<b>Item</b>	<b>Description</b>	<b>Default</b>
<b>General Settings</b>		
Index	Indicate the ordinal of the list.	--
Type	Show the type of the link.	WLAN
Description	Enter a description for this link, it can be null.	Null
Connection Type	Select from "DHCP" or "Static".	DHCP
<b>APP Hotspot Settings</b>		
APP Setting SSID	Enter the SSID of the hotspot where the device configures the router parameters through the mobile APP. SSID (Service Set Identifier) refers to the network name of the WLAN. Please enter 1~32 characters.	Next
Security Mode	Select the security authentication method, the options include: OPEN, WEP, WPA/WPA2. When the authentication method is WPA/WPA2, it also means automatic matching (that is, all three modes can be supported);	WPA/WPA2
Connect to Hidden SSID	Click the toggle button to enable/disable the "Connect to hidden SSID" function. When the device is in client mode and needs to connect to any access point that has hidden SSID, this function must be enabled here.	OFF
Password	Enter the password of the access point that the device wants to access. Please enter 8~63 characters.	cfg_ap_key
<b>Primary Hotspot Settings</b>		
Enable	Click the toggle button to enable/disable, the preferred hotspot for the configuration of the router wifi connection.	Disable
Security Mode	Select the security authentication method, the available options include: OPEN, WEP, WPA/WPA2. When the authentication method is selected as WPA/WPA2, it also means automatic matching (that is, all three modes can be supported);	WPA/WPA2
SSID	The SSID parameters of the preferred hotspot for the wifi connection of the router	router
Connect to Hidden SSID	Click the toggle button to enable/disable the "Connect to hidden SSID" function. When the device is in client mode and needs to connect to any access point that has hidden SSID, this function must be enabled here.	OFF
Password	Enter the password of the access point that the device wants to access. Please enter 8~63 characters.	Null

<b>Link Settings (WLAN)</b>		
<b>Item</b>	<b>Description</b>	<b>Default</b>
<b>Secondly hotspot Settings</b>		
Enable	Click the toggle button to enable/disable, an alternative hotspot for the configuration of the router wifi connection	Disable
Security Mode	Select the security authentication method, the options include: OPEN, WEP, WPA/WPA2. When the authentication method is WPA/WPA2, it also means automatic matching (that is, all three modes can be supported);	WPA/WPA2
SSID	SSID parameters of the alternative hotspot connected to the router wifi	router
Connect to Hidden SSID	Click the toggle button to enable/disable the "Connect to hidden SSID" function. When the device is in client mode and needs to connect to any access point that has hidden SSID, this function must be enabled here.	OFF
Password	Enter the password of the access point that the device wants to access. Please enter 8~63 characters.	Null
<b>Static Address Settings</b>		
IP Address	Set the IP plus mask that can access the Internet, eg., 192.168.1.1/24.	Null
Gateway	Enter the IP address of the WiFi AP.	Null
Primary Server	Set the preferred DNS server.	Null
Secondary Server	Set the primary DNS server.	Null
<b>Ping Detection Settings</b>		
Enable	Click the toggle button to enable/disable the ping detection mechanism, a keep alive policy of the router.	ON
Primary Server	Router will ping this primary address/domain name to check that if the current connectivity is active.	8.8.8.8
Secondly Server	Router will ping this secondary address/domain name to check that if the current connectivity is active.	114.114.114.114
Interval	Set the ping interval, measured in seconds.	300
Retry Interval	Set the ping retry interval. When ping failed, the router will ping again every retry interval.	5
Timeout	Set the ping timeout, measured in seconds.	3
Max Ping Tries	Set the max ping tries. Switch to another link or take emergency action if the max continuous ping tries reached.	3
<b>Advance Settings</b>		

<b>Link Settings (WLAN)</b>		
<b>Item</b>	<b>Description</b>	<b>Default</b>
Nat Enable	Click the toggle button to enable/disable the NAT function. NAT is Network Address Translation.	ON
MTU	Enter the Maximum Transmission Unit.	1500
Upload Bandwidth	Enter the upload bandwidth used for QoS, measured in kbps.	10000
Download Bandwidth	Enter the download bandwidth used for QoS, measured in kbps.	10000
Override Primary DNS	Defines the primary DNS server assigned by the DHCP server to the client.	Null
Override Secondly DNS	Defines the Secondary DNS server assigned by the DHCP server to the client.	Null
Debug Enable	Click the toggle button to enable/disable this option. Enable for debugging information output.	ON
Verbose Debug Enable	Click the toggle button to enable/disable this option. Enable for verbose debugging information output.	OFF
<b>Cellular</b>		
<b>Item</b>	<b>Description</b>	<b>Default</b>
<b>General Settings</b>		
Index	Indicate the ordinal of the list.	--
SIM Card	Set the currently editing SIM card.	SIM1
Phone Number	Enter the phone number of the SIM card.	Null
Enable Pin Lock	Enable or disable Pin codes.	
PIN Code	Enter a 4-8 characters PIN code used for unlocking the SIM.	Null
Enable change Pin Code	Is it allowed to change the Pin code.	
Extra AT cmd	Enter additional AT commands for wireless module initialization for expert use only.	Null
<b>Cellular Network Settings</b>		
Network Type	Select the cellular network type, that is, the network access sequence. Select from "Auto", "2G Only", "2G First", "3G Only", "3G First", "4G Only", "4G First".	Auto
Band Type	Select from "All" or "Specify". You may choose certain bands if choosing "Specify".	All
<b>Advanced Settings</b>		
Debug Enable	Click the toggle button to enable/disable this option. Enable for debugging information output.	ON

Link Settings (WLAN)		
Item	Description	Default
Verbose Debug Enable	Click the toggle button to enable/disable this option. Enable for verbose debugging information output.	OFF

Cellular Status		
Item	Description	
Index	Indicate the ordinal of the list.	
Modem Status	Show the operating status of the wireless module.	
ModemModel	Show the model of the wireless module.	
Current SIM	Show the SIM card that your router is using: SIM1.	
Phone Number	Show the phone number of the current SIM. <b>Note:</b> This option will be displayed if enter manually in <b>Cellular &gt; Advanced Cellular Settings &gt; SIM1/SIM2 &gt; Phone Number</b> .	
IMSI	Show the IMSI number of the current SIM.	
ICCID	Show the ICCID number of the current SIM.	
Registration	Show the current network status.	
Network Provider	Show the name of Network Provider.	
Network Type	Show the current network service type, e.g. GPRS.	
Signal Strength	Show the current signal strength detected by the mobile.	
Bit Error Rate	Show the current bit error rate.	
PLMN ID	Show the current PLMN ID.	
Local Area Code	Show the current local area code used for identifying different area.	
Cell ID	Show the current cell ID used for locating the router.	
IMEI	Show the IMEI (International Mobile Equipment Identity) number of the radio module.	
Firmware Version	Show the current firmware version of the radio module.	
AT Debug		
Item	Description	Default
Command	Enter the AT command that you want to send to cellular module in this text box.	Null
Result	Show the AT command responded by cellular module in this text box.	Null

Cellular Status		
Item	Description	
Send	Click the button to send AT command.	--

## Chapter 5 System Log

Working Time Limitation		
Item	Description	Default
Enable	Whether to enable working time limit	OFF
Start Hour	Valid when Enable is enabled, hours allowed to work	0
Start Minute	Valid when Enable is enabled, minutes allowed to work	0
Stop Hour	Valid when Enable is enabled, hours not allowed to work	0
Stop Minute	Valid when Enable is enabled, minutes not allowed to work	0
GPS Setting		
GPS Report Interval	GPS data reporting interval, in minutes	3
Interval in relay on	The reporting interval of the BMS when the relay is off, in seconds	1
Interval in relay off	BMS reporting interval when the relay is closed, in seconds	1

## Chapter 6 Connection

Connection		
Item	Description	Default
Address1	The preferred address for establishing MQTT connection with the platform	Null
Port1	The preferred port for establishing MQTT connection with the platform, which is used in conjunction with the preferred address	Null
Http URL1	URL address for establishing HTTP connection with the platform	Null
Address2	Primary address for establishing MQTT connection with the platform	Null
Port2	Alternative port for establishing MQTT connection with the platform, bundled with primary address	Null



Http Idle Time	The timeout period for initiating an HTTP connection to the platform, in seconds	60
MQTT KeepAlive	Keepalive time of connection with platform MQTT, in seconds	60
Try Reconnect Interval	When the MQTT connection with the platform is disconnected, the time between retrying to connect, in seconds	60
Max Retries Times	The maximum number of attempts to reconnect, when it reaches three times, try to change the connection address to reconnect	3

Mode		
Item	Description	Default
Work Mode	Current working mode, normal mode/power saving mode	Normal Mode
Wakeup Timing		
Item	Description	Default
Enable	Whether to enable wake-up time point	OFF
Time1 Hour	The hour of the first wake-up time point that can be set	0
Time1 Minute	Minutes of the first wake-up time that can be set	0
Time2 Hour	The hour of the second wake-up time point that can be set	0
Time2 Minute	Minutes of the second wake-up time point that can be set	0
Time3 Hour	The hour of the third wake-up time point that can be set	0
Time3 Minute	Minutes of the third wake-up time point that can be set	0
RFID Trigger		
Item	Description	Default
Enable	Whether to enable RFID to wake up the device and exit the power saving mode	ON

## Chapter 7 CLI Commands

The command-line interface (CLI) is a software interface providing another way to set the parameters of equipment from the [SSH](#) or through a [telnet](#) network connection. To configure it with CLI commands. After establishing a Telnet or SSH connection with the communication board, enter the login account and password (default admin/admin) to enter the configuration mode of the communication board, as shown below.

```
router login: admin
Password:
#
!           Comments
add        Add a list entry of configuration
clear      Clear statistics
config     Configuration operation
debug      Output debug information to the console
del        Delete a list entry of configuration
exit       Exit from the CLI
help       Display an overview of the CLI syntax
ovpn_cert_get Download OpenVPN certificate file via http or ftp
ping       Send messages to network hosts
reboot     Halt and perform a cold restart
set        Set system configuration
show       Show system configuration
status     Show running system information
tftupdate  Update firmware or configuration file using tftp
traceroute Print the route packets trace to network host
trigger    Trigger action
urlupdate  Update firmware via http or ftp
ver        Show version of firmware

#
```

### CLI command:

```
# ?
!           Comments
add        Add a list entry of configuration
clear      Clear statistics
config     Configuration operation
debug      Output debug information to the console
del        Delete a list entry of configuration
exit       Exit from the CLI
help       Display an overview of the CLI syntax
ping       Send messages to network hosts
reboot     Halt and perform a cold restart
route      Static route modify dynamically, this setting will not be saved
set        Set system configuration
show       Show system configuration
status     Show running system information
tftupdate  Update firmware using tftp
```

- traceroute     Print the route packets trace to network host
- urlupdate     Update firmware using http or ftp
- ver             Show version of firmware

Following is a table about the description of help and the error should be encountered in the configuring program.

Commands /tips	Description
?	Typing a question mark “?” will show you the help information. eg. # config (Press ‘?’) config    Configuration operation  # config (Press spacebar +’?’) commit         Save the configuration changes and take effect changed configuration save_and_apply    Save the configuration changes and take effect changed configuration loaddefault       Restore Factory Configuration
Ctrl+c	Press these two keys at the same time, except its “copy” function but also can be used for “break” out of the setting program.
Syntax error: The command is not completed	The current command is not completed.
Tick space key+ Tab key	It can help you finish you command. Example: # config (tick Enter key) Syntax error: The command is not completed  # config (tick space key+ Tab key) commit            save_and_apply    loaddefault
#config commit # config save_and_apply	When your setting finished, you should enter those commands to make your setting take effect on the device. <b>Note:</b> Commit and save_and_apply plays the same role.

Commands	Syntax	Description
Debug	Debug <i>parameters</i>	Turn on or turn off debug function
Show	Show <i>parameters</i>	Show current configuration of each function , if we need to see all please using “show running ”
Set	Set <i>parameters</i>	All the function parameters are set by commands set and add, the difference is that set is for the single parameter and add is for the list parameter
Add	Add <i>parameters</i>	

## CLI examples

The best and quickest way to master CLI is firstly to view all features from the webpage and then read all CLI commands at a time, finally learn to configure it with some reference examples.

### Example 1: Show current version

```
# status system
firmware_version = 1.0.0
firmware_version_full = "1.0.0 (Rev 2820)"
hardware_version = 1.2.0
kernel_version = 3.10.108
device_model = ICE1001-S4LC (Global)
serial_number = 05170120040021
uptime = "1 day, 00:55:30"
system_time = "Tue Apr 14 20:18:44 2020 (NTP not enabled)"
ram_usage = "9M Free/64M Total"
```

### Example 2: Update firmware via tftp

```
# tftpupdate (space+?)
  firmware  New firmware
  config    New configuration file
# tftpupdate firmware (space+?)
  filename  New file
# tftpupdate firmware filename ice1001-firmware-sysupgrade-unknown.ruf host 192.168.100.99
//enter a new firmware name
Downloading
Download success.
Upgrading
Upgrade success.          //update success
# reboot                  // take effect after restart
Rebooting...
OK
```

### Example 3: Set link-manager

```
# set
# set (space+?)
  cellular      Cellular
  ddns          DDNS
  dido          DIDO
  email         Email
  ethernet      Ethernet
  event         Event Management
```

firewall	Firewall
gre	GRE
ip_passthrough	IP Passthrough
ipsec	IPSec
lan	Local Area Network
link_manager	Link Manager
ntp	NTP
openvpn	OpenVPN
reboot	Automatic Reboot
route	Route
sms	SMS
ssh	SSH
syslog	Syslog
system	System
user_management	User Management
web_server	Web Server
wifi	WiFi AP

# set link\_manager (space+?)

primary_link	Primary Link
backup_link	Backup Link
backup_mode	BackSup Mode
revert_interval	Revert Interval
emergency_reboot	Emergency Reboot
link	Link Settings

# set link\_manager primary\_link (space+?)

Enum Primary Link (wwan1/wan/wlan)

# set link\_manager primary\_link wwan1

OK

//select "wwan1" as primary\_link  
//setting succeed

#set link\_manager link 1 (space+?)

type	Type
desc	Description
connection_type	Connection Type
wwan	WWAN Settings
static_addr	Static Address Settings
pppoe	PPPoE Settings
ping	Ping Settings
nat_enable	NAT Enable
mtu	MTU
weight	Weight
upload_bandwidth	Upload Bandwidth
download_bandwidth	Download Bandwidth
dns1_overrided	Overrided Primary DNS
dns2_overrided	Overrided Secondary DNS
debug_enable	Debug Enable

```

    verbose_debug_enable    Verbose Debug Enable
# set link_manager link 1 type wwan1
OK
# set link_manager link 1 wwan (space+?)
    auto_apn                Automatic APN Selection
    apn                     APN
    username                Username
    password                Password
    dialup_number           Dialup Number
    auth_type               Authentication Type
    data_allowance          Data Allowance
    billing_day             Billing Day
# set link_manager link 1 wwan data_allowance 100                //open cellular
switch_by_data_traffic
OK                                                                //setting succeed
# set link_manager link 1 wwan billing_day 1                    //setting specifies the day of
month for billing
OK                                                                //setting succeed
...
# config save_and_apply
OK                                                                // save and apply current configuration, make you
configuration effect

```

## Example 4: Set Cellular

```

# show cellular all
sim {
    id = 1
    card = sim1
    phone_number = ""
    pin_code = ""
    extra_at_cmd = ""
    telnet_port = 0
    network_type = auto
    band_select_type = all
    band_settings {
        gsm_850 = false
        gsm_900 = false
        gsm_1800 = false
        gsm_1900 = false
        wcdma_800 = false
        wcdma_850 = false
        wcdma_900 = false
        wcdma_1900 = false
    }
}

```

```

wcdma_2100 = false
wcdma_1700 = false
wcdma_band19 = false
lte_band1 = false
lte_band2 = false
lte_band3 = false
lte_band4 = false
lte_band5 = false
lte_band7 = false
lte_band8 = false
lte_band13 = false
lte_band17 = false
lte_band18 = false
lte_band19 = false
lte_band20 = false
lte_band21 = false
lte_band25 = false
lte_band28 = false
lte_band31 = false
lte_band38 = false
lte_band39 = false
lte_band40 = false
lte_band41 = false
}
telit_band_settings {
    gsm_band = 900_and_1800
    wcdma_band = 1900
}
debug_enable = true
verbose_debug_enable = false
}
# set(space+?)
cellular      ddns      dido      email      ethernet
event         firewall  gre       ip_passthrough  ipsec
l2tp          lan       link_manager  ntp        openvpn
pptp          reboot   route     sms         ssh
syslog        system   user_management  web_server  wifi
# set cellular(space+?)
sim SIM Settings
# set cellular sim(space+?)
Integer Index (1..1)

# set cellular sim 1(space+?)
card          SIM Card
phone_number  Phone Number

```

```

pin_code           PIN Code
extra_at_cmd       Extra AT Cmd
telnet_port        Telnet Port
network_type       Network Type
band_select_type   Band Select Type
band_settings      Band Settings
telit_band_settings Band Settings
debug_enable       Debug Enable
verbose_debug_enable Verbose Debug Enable
# set cellular sim 1 phone_number 18620435279
OK
...
# config save_and_apply
OK // save and apply current configuration, make you
configuration effect

```

## Glossary

Abbr.	Description
AC	Alternating Current
APN	Access Point Name of GPRS Service Provider Network
ASCII	American Standard Code for Information Interchange
CE	Conformité Européene (European Conformity)
CHAP	Challenge Handshake Authentication Protocol
CLI	Command Line Interface for batch scripting
CSD	Circuit Switched Data
CTS	Clear to Send
dB	Decibel
dBi	Decibel Relative to an Isotropic radiator
DC	Direct Current
DCD	Data Carrier Detect
DCE	Data Communication Equipment (typically modems)
DCS 1800	Digital Cellular System, also referred to as PCN
DI	Digital Input
DO	Digital Output
DSR	Data Set Ready
DTE	Data Terminal Equipment
DTMF	Dual Tone Multi-frequency
DTR	Data Terminal Ready
EDGE	Enhanced Data rates for Global Evolution of GSM and IS-136



<b>Abbr.</b>	<b>Description</b>
EMC	Electromagnetic Compatibility
EMI	Electro-Magnetic Interference
ESD	Electrostatic Discharges
ETSI	European Telecommunications Standards Institute
FDD LTE	Frequency Division Duplexing Long Term Evolution
GND	Ground
GPRS	General Packet Radio Service
GRE	generic route encapsulation
GSM	Global System for Mobile Communications
HSPA	High Speed Packet Access
ID	identification data
IMEI	International Mobile Equipment Identification
IP	Internet Protocol
IPSec	Internet Protocol Security
kbps	kbits per second
L2TP	Layer 2 Tunneling Protocol
LAN	local area network
LED	Light Emitting Diode
M2M	Machine to Machine
MAX	Maximum
Min	Minimum
MO	Mobile Originated
MS	Mobile Station
MT	Mobile Terminated
OpenVPN	Open Virtual Private Network
PAP	Password Authentication Protocol
PC	Personal Computer
PCN	Personal Communications Network, also referred to as DCS 1800
PCS	Personal Communication System, also referred to as GSM 1900
PDU	Protocol Data Unit
PIN	Personal Identity Number
PLCs	Program Logic Control System
PPP	Point-to-point Protocol
PPTP	Point to Point Tunneling Protocol
PSU	Power Supply Unit
PUK	Personal Unblocking Key
R&TTE	Radio and Telecommunication Terminal Equipment
RF	Radio Frequency
RTS	Request to Send
RTU	Remote Terminal Unit
Rx	Receive Direction

<b>Abbr.</b>	<b>Description</b>
SDK	Software Development Kit
SIM	subscriber identification module
SMA antenna	Stubby antenna or Magnet antenna
SMS	Short Message Service
SNMP	Simple Network Management Protocol
TCP/IP	Transmission Control Protocol / Internet Protocol
TE	Terminal Equipment, also referred to as DTE
Tx	Transmit Direction
UART	Universal Asynchronous Receiver-transmitter
UMTS	Universal Mobile Telecommunications System
USB	Universal Serial Bus
USSD	Unstructured Supplementary Service Data
VDC	Volts Direct Current
VLAN	Virtual Local Area Network
VPN	Virtual Private Network
VSWR	Voltage Stationary Wave Ratio
WAN	Wide Area Network

**ICE Robotics EMEA**

Add: Airborne Avenue 55 2133 LV Hoofddorp (The Netherlands)

Web:[www.icerobotics.com](http://www.icerobotics.com)