

# eCAN

# User Manual



## Revision History

Revision Date	Document Ver.	Pages Revised	Revised/Added/Removed	Details of Revision
2021.07.02	1.0	All	-	New

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**Please be sure to read this manual before using and use the product safely and accurately.**

- Pictures and photos in the manual may be different from the physical, and the document is subject to change without notice to improve performance. For the last information, please visit our website ([www.sysbas.com](http://www.sysbas.com)).
- To view frequently asked questions and answers, please visit our website and find Support –Technical Support – FAQ section.
- Documents can be downloaded from the product page or Download section.
- Sellers or users should be aware of the fact that this device is intended for industrial use(Class A), not for residential use.
- This device has a potential for radio interference during use and may receive harmful interference from other devices.
- Warranty policy is included in the product packaging.
- This product is domestic (Korea) and cannot be used overseas with different power/frequency.

## 1. CAN

CAN was developed to cause this problem by German company Bosch in 1986. It used bus communication method rather than 1:1 communication method which UART based serial communication has, and various technologies were incorporated to prevent communication conflicts.

### 1) Message Directional

ID is assigned to CAN according to the priority of the message and used to communicated. This causes each node to self-judge the message delivered to each node and ignore the message which is except it needs.

### 2) Enhanced Error Mechanism

Several mechanisms have applied to CAN to improve communication reliability. If communication state detection, error check and management were carried out in conventional SW method, CAN can detect and handle errors occurring during communication due to the error detection mechanism built in HW in real time.

### 3) Multi-Master

CAN communication is conducted based on priority of each note and message without a network administrator which manages the network. If arbitrary node A message is assigned with the highest priority ID, the rest of the nodes communicate according to the priority of each ID after the A message is sent.

## 2. Components

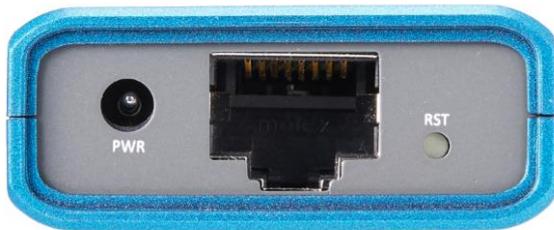


Components	Ordering Information
eCAN, 5V DC Adaptor, LAN Cable, Warranty/Download Guide	eCAN

### 3. Product



#### Connector



DC Adaptor, LAN Port



CAN Port(Male)

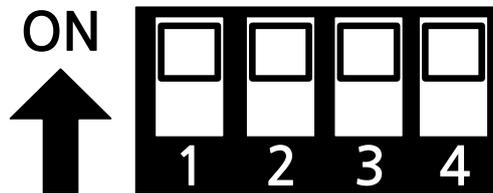
#### LED

	LED	State	Operation
1	RDY(Ready)	Blink	Blinks when power is applied and boots normally
2	DATA(Data)	Blink	LED blinks when sending/receiving data
3	LNK(Link)	On/Off/ Blink	Lights when Ethernet socket is connected Blinks when Bus off

**Button**

Press RST button less than 3 seconds: Reset equipment  
 Press RST button more than 3 seconds: Factory initialize equipment  
 (Please refer to the APPENDIX for initialization values)

**Switch**



	Switch Number	Status	Operation
1	Switch1, 4	-	Not used
2	Switch2, 3 * Must be used at the same time	ON	Enable termination resistance of 120Ω
		OFF	Disable termination resistance of 120Ω

## 4. Features

eCAN performs the following functions, as a converter converting signals coming from the CAN BUS into network signals over the LAN port, or delivers signals to the CAN BUS via network signals.

### 1) Converts CAN communication to socket communication

Converts CAN communication which requires a direct connection to the cable facility, to socket communication which the network communication is able.

### 2) CAN VBUS Power Supply Feature

In addition to the 5V Power supply through DC adapter, eCAN can be also powered by pin no.9 of the CAN port.

### 3) VCP(Virtual Com Port) Function

ComRedirector, a virtual COM Port(VCP) among the utilities provided, enables using LAN port of the eCAN connected to the same network as if it were a serial port mounted on a PC. It also supports Sever/Client mode to connect serial socket.

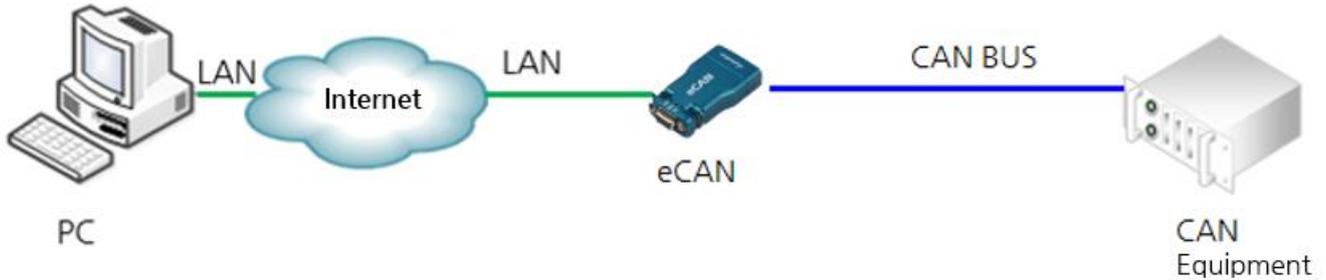
### 4) Web Page Setup Feature

Users can change, save, reboot the eCAN through its own Web Page provided.

## 5. How to Use

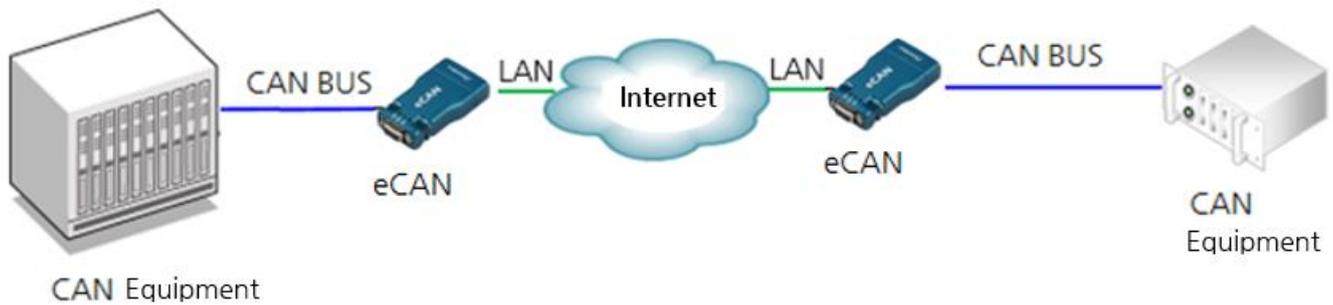
### Connection between CAN equipment(CAN Bus) and PC

eCAN performs ComRedirector, TCP Server/Client and UPD connection over the network. Users can check CAN data on PC over the network, or generate CAN data and forward it to CAN Bus.



### Connection between CAN equipment(CAN Bus)

To enable communication between different CAN Buses, set two eCANs to Server and Client(Target: Server) each and connect to the network.



\* Please refer to 6. How to Setup for more information on setting up each connection.

## 6. How to Setup

First, check if the input voltage supplied to eCAN is consistent with 5V 1A and supply the voltage correctly. If power is supplied normally, the eCAN starts booting with power on.

There are LEDs such as RDY to check the operation status. Please refer to the manual Ch3. Product – LED menu in for more information.

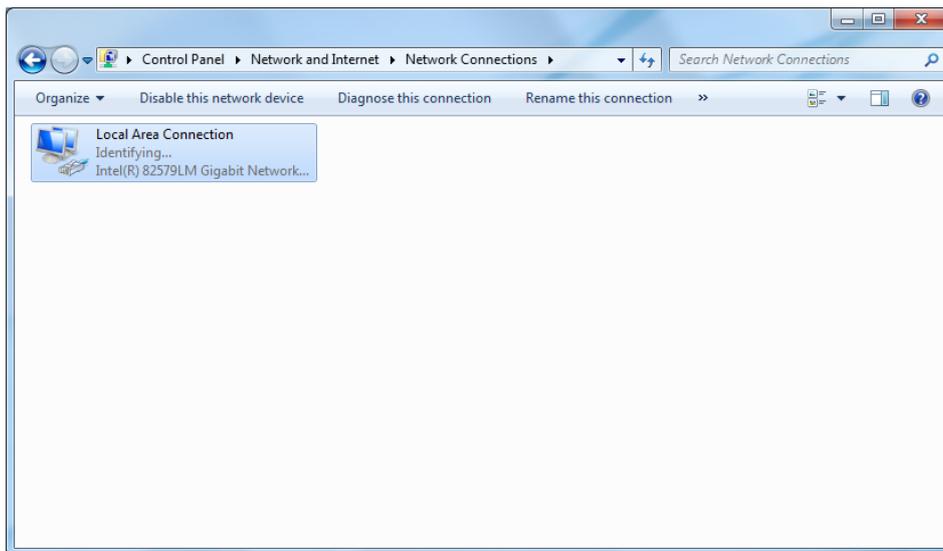
To view or setup your eCAN environment, you should use eCANConfig utility, or use the WebPage to connect to the IP Address, the network address on which the eCAN is operating.

### Setting through Web Page

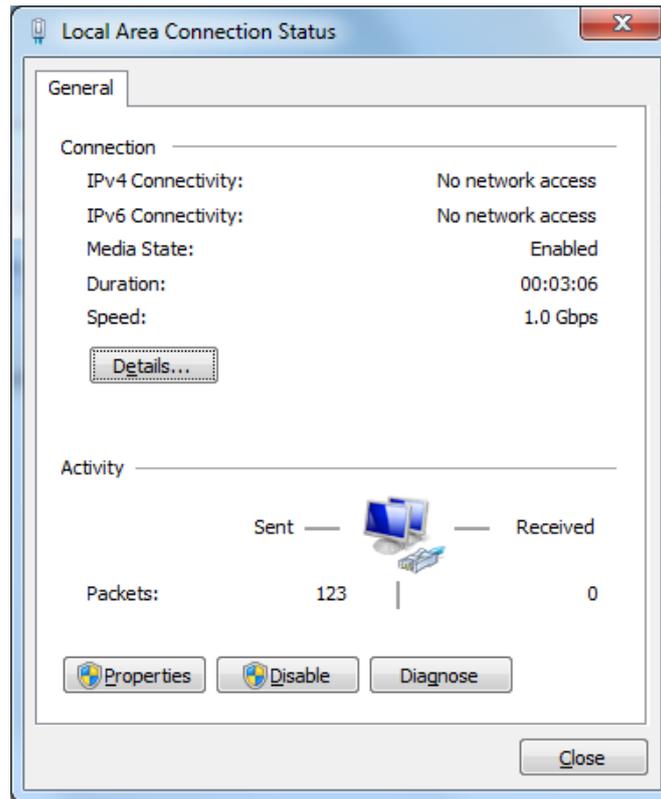
#### (1) Preparation for Connection(when connecting PC-eCAN without AP)

To connect eCAN and PC directly, you need to set the network address of the PC environment. Please follow the order of setup as bellow.

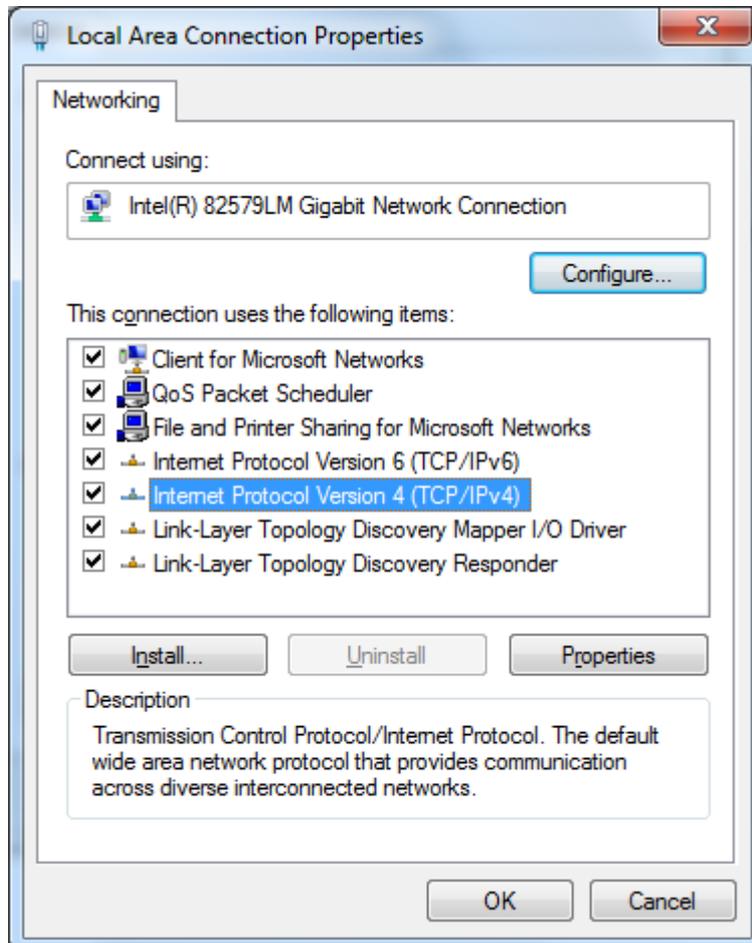
1. Go to Control Panel\Network and Internet\Network Connection and open the Ethernet icon.



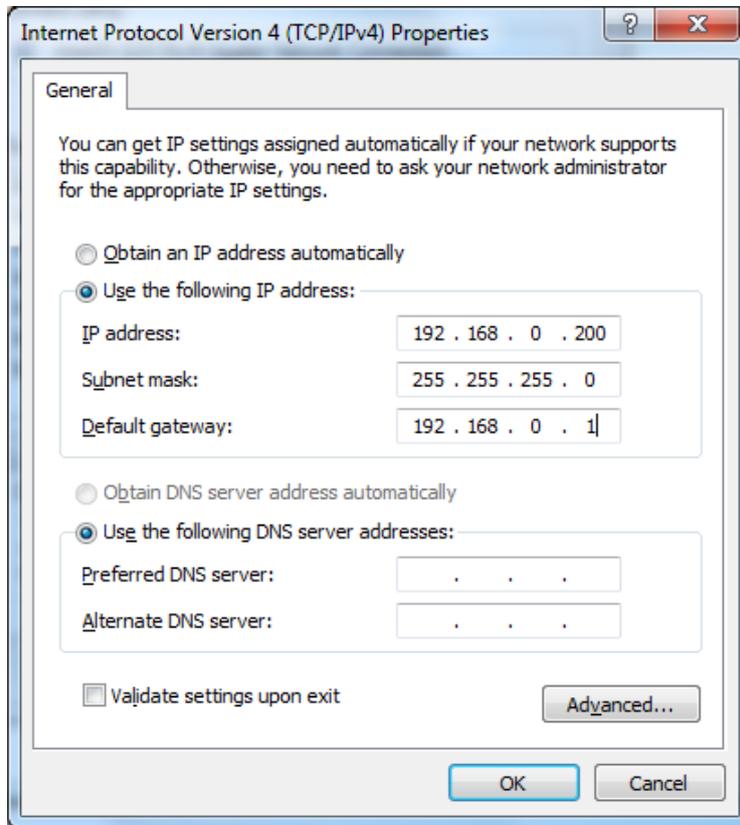
2. Click "Properties".



3. Click Internet protocol version(TCP/IPv4) and then click Properties.



- 4. Click “Use IP Address(S)” and enter IP address.
- 5. Enter the IP address and subnet mask address and click “OK”.



**(2) Web Connection**

Open a web browser and enter the IP address of the eCAN. Then the authentication window appears on the first connection. Default ID is "ecan", password is "99999999(eight nines)". After login, the web settings page appears.

eCAN Initial IP Address: 192.168.0.223

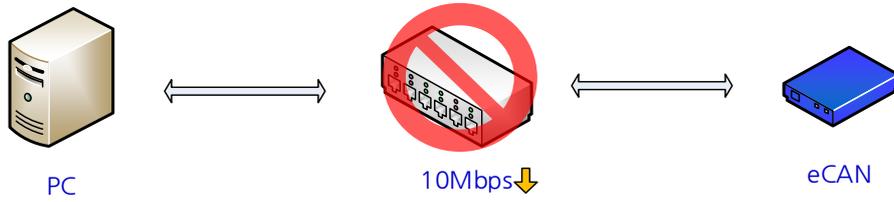
User name: ecan

Password: 99999999



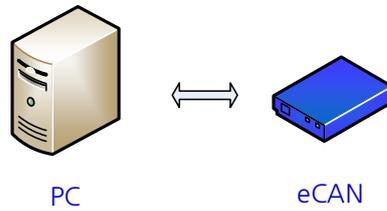
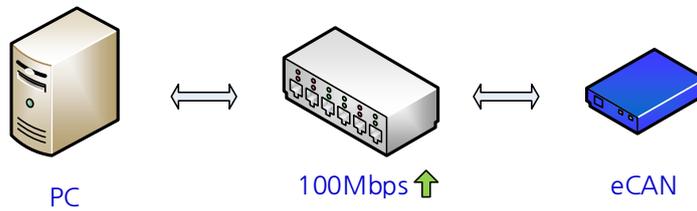
### Precautions for Accessing the Web

The setting using the web is not supported in the network environment below 10Mbps.



Therefore, if you change the settings using the web, you should connect the integrated device to the 100Mbps network environment or PC as below. If it is difficult to configure the environment below, you can use the eCANConfig utility to set up your device.

Please refer to (1) Preparation for Connection when connecting directly with PC.



### (3) Network Setting

The network Setting pages appears on the initial screen of the Web Settings page, that shows network information for the equipment. The screen on the page is as follows.

	Network Setting	CAN Setting	Filter Setting	Change ID/PW	Reboot
Device Name	<input type="text" value="eCAN"/>				
MAC Address	<input type="text" value="00:05:F4:00:2E:D1"/>				
Connection Type	<input type="text" value="Static"/>				
IP Address	<input type="text" value="192.168.0.223"/>				
Subnet Mask	<input type="text" value="255.255.255.0"/>				
Gateway	<input type="text" value="192.168.0.254"/>				
DNS	<input type="text" value="168.126.63.1"/>				
	<input type="button" value="Submit"/> <input type="button" value="Cancel"/>				

You can set your network environment and management in the Network Setting. After changing the settings, you must press the [Submit] button to save the changed value and restart it through the Reboot menu to apply it to the actual equipment operation. If you exit without saving the changes, the changed value will be lost.

If you have not saved the changed value with the [Submit] button, you can return to the before value with the [Cancel] button.

**\*Please refer to APPENDIX 4. Settings for detailed information on Network Setting.**

#### (4) CAN Setting

The screenshot shows the eCAN configuration interface with the 'CAN Setting' tab selected. The interface is divided into two main sections: 'Ethernet Options' and 'CAN Options'. At the bottom, there are 'Submit' and 'Cancel' buttons.

Network Setting	CAN Setting	Filter Setting	Change ID/PW	Reboot	
Ethernet Options	Operation Mode	COM Redirector			
	Local Port	4001			
	Target IP	0.0.0.0			
	Target Port	4001			
	TCP Alive Check Time	60	(0~65535 seconds)		
	TCP No-delay	Enable			
CAN Options	Baudrate	125 kbps			
	Acceptance Spec	B			
	Acceptance Filtering ID (hex value)	0			
	Acceptance Filtering MASK (hex value)	0			

You can set the operating environment for CAN port in CAN Settings. After changing the settings, you must press the [Submit] button to save the changed value and restart it through the Reboot menu to apply it to the actual equipment operation. If you exit without saving the changes, the changed value will be lost.

If you have not saved the changed value with the [Submit] button, you can return to the before value with the [Cancel] button.

**\*Please refer to APPENDIX 4. Settings for detailed information on Network Setting.**

### (5) Filter Setting

You can set the SW Filter for the eCAN.

SW Filter is a feature that blocks a single ID unlike ID and MASK, and can set up to 32 SW Filter.

**If you specify the ID and properties to filter, only those IDs will not be received.**

Filter No.	Status	Value
1	Disable	0x0
2	Disable	0x0
3	Disable	0x0
4	Disable	0x0
5	Disable	0x0
6	Disable	0x0
7	Disable	0x0
8	Disable	0x0
9	Disable	0x0
10	Disable	0x0
11	Disable	0x0
12	Disable	0x0
13	Disable	0x0
14	Disable	0x0
15	Disable	0x0
16	Disable	0x0
17	Disable	0x0
18	Disable	0x0
19	Disable	0x0
20	Disable	0x0
21	Disable	0x0
22	Disable	0x0
23	Disable	0x0
24	Disable	0x0
25	Disable	0x0
26	Disable	0x0
27	Disable	0x0
28	Disable	0x0
29	Disable	0x0
30	Disable	0x0
31	Disable	0x0
32	Disable	0x0

SW Filtering:

Set the SW Filter value for CAN ports in Filter Setting. You can set the ID and Properties to filter by electing the filter number in the combo box at the bottom of the setting page. After changing the settings, you must press the [Submit] button to save the changed value and restart it through the Reboot menu to apply it to the actual equipment operation. If you exit without saving the changes, the changed value will be lost.

### (6) Change ID/PW

To access the web settings page, an ID and Password are required. ID and password can be changed by the user on the screen below. Please be aware that this setting will be applied simultaneously with saving without rebooting. If you forget your ID and password, you can reset it to the default ID and password by pressing the RST button for more than 3 seconds.

**eCAN**

Network Setting    CAN Setting    Filter Setting    **Change ID/PW**    Reboot

New ID

New Password

Retype Password

### (7) Reboot

The device will be restarted.

If you have changed the setting and save it via [Submit], you must press the [Reboot] button to restart the eCAN to reflect the set values normally.

**eCAN**

Network Setting    CAN Setting    Filter Setting    Change ID/PW    **Reboot**

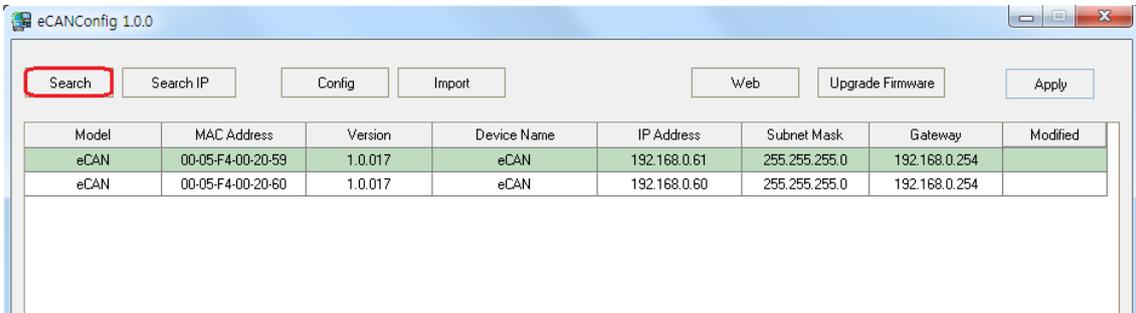
If you click the reboot button,  
eCAN will be rebooting after a few seconds.

## Setting through eCANConfig(PC Utility)

### (1) Search

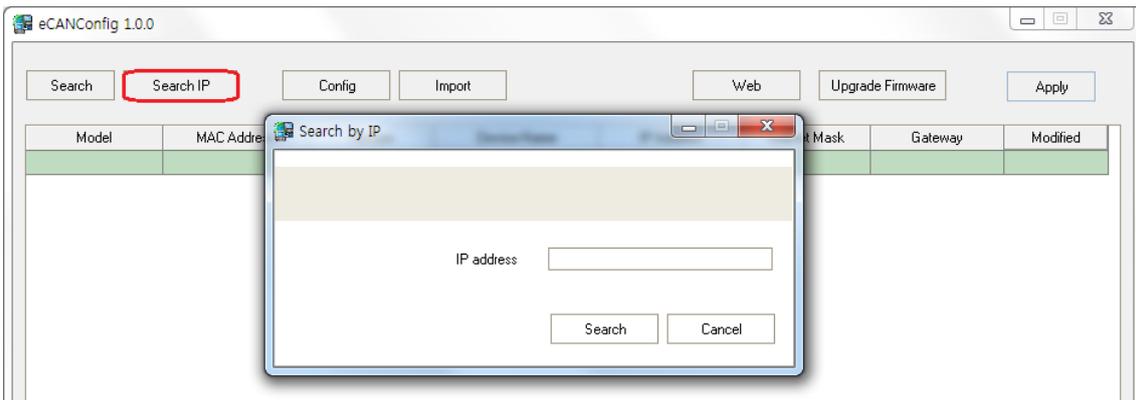
Search and displays eCAN equipment that exists on the local area network.

However, if eCAN is in the socket connected state, it will not be searched.



### (2) Search IP

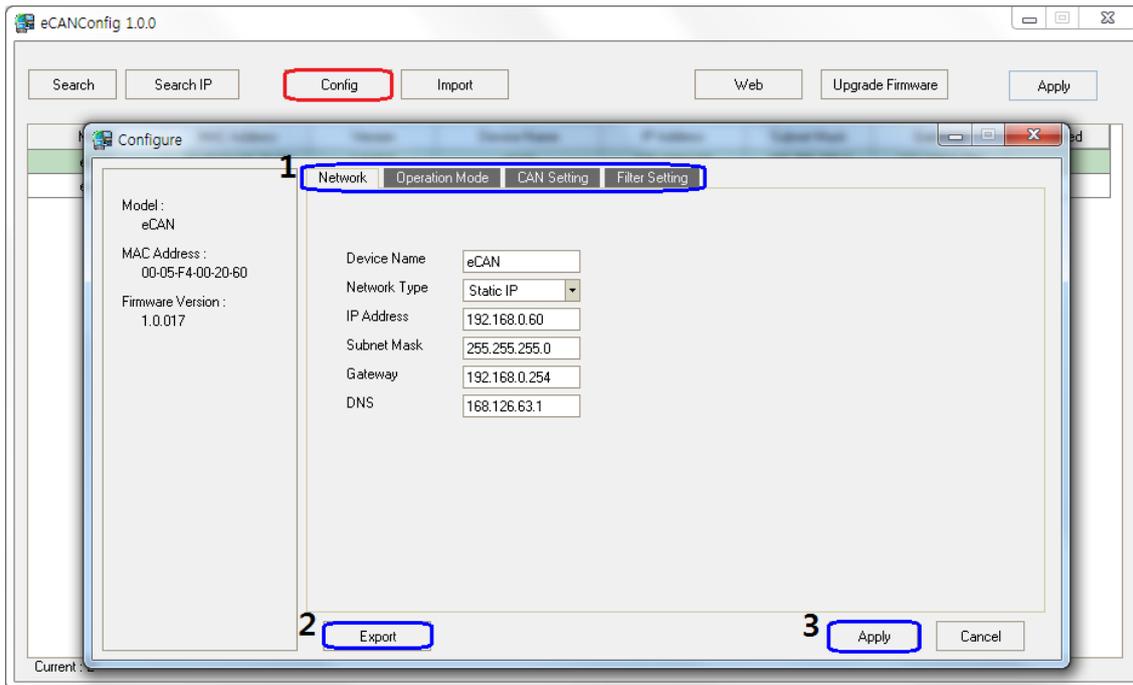
If you cannot find it by searching or if it is not a local network, you can search directly by IP address. When you click [Search IP] button, the Search by IP window appears where you can enter the IP address directly to search for.



### (3) Configure

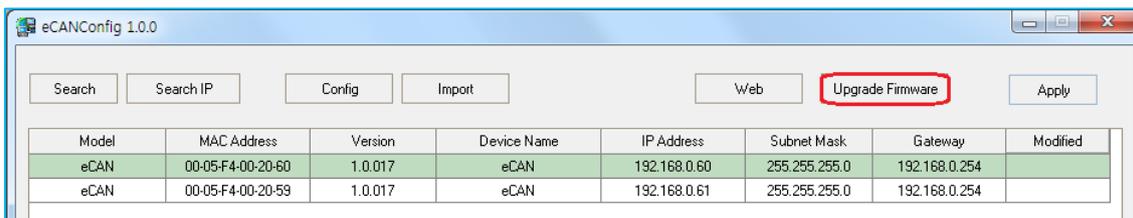
You can change and save settings for the selected device.

- 1: You can set Network, Operation Mode, CAN Setting, Filter Setting.
- 2: Click Export button to save the information currently set in the eCAN to your PC.
- 3: Click Apply button to save and apply the changed setup information to the device.



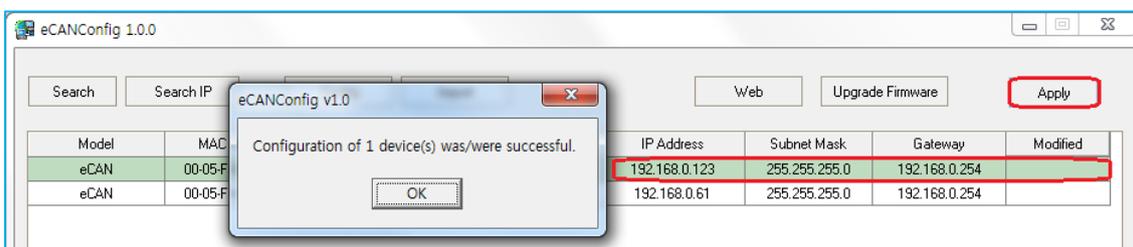
**(4) Upgrade Firmware**

You can upgrade the firmware for the selected device.



**(5) Apply**

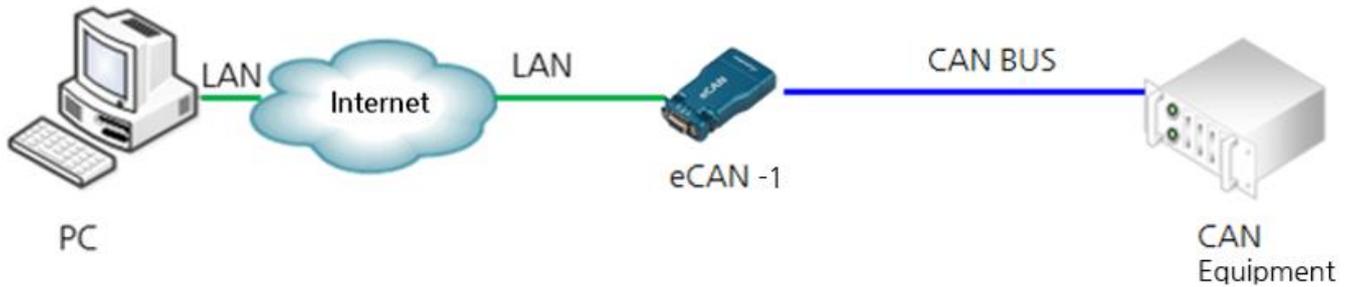
You can set the Device Name, IP Address, Subnet Mask, and Gateway in the searched Device List. If you click [Apply] after changing, it applies to each device that has changed its settings. However, if the network information changes, you may not be able to connect immediately, so you should Refresh through the [Search] button.



## 7. Setting Examples

Based on the information above, this chapter explains easy setup information through various connections. You can understand how to set the following configuration as an example.

### Connection between CAN equipment(CAN Bus) and PC



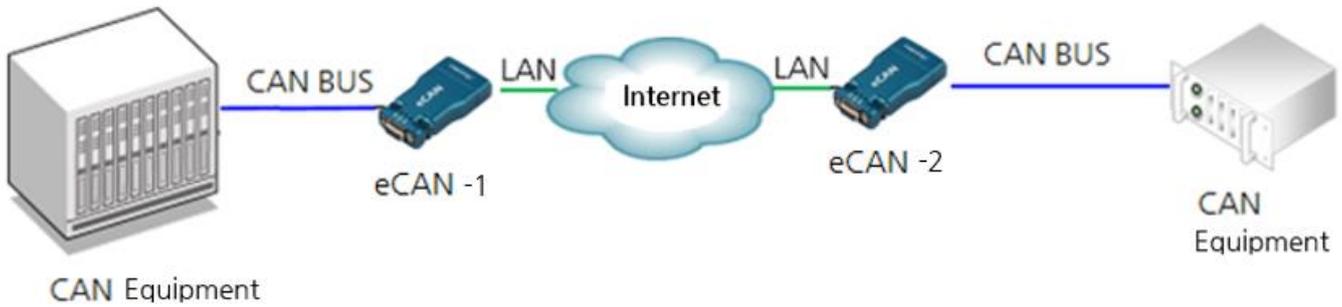
Category	PC Connected LAN ( or PC Connected WiFi )	eCAN-1
<b>Network Setting</b>	Device IP Address: 192.168.0.100 Subnet Mask: 255.255.255.0 Gateway: 192.168.0.1 DNS:168.126.63.1	Connection Type: Static Device IP Address: 192.168.0.200 Subnet Mask: 255.255.255.0 Gateway: 192.168.0.1 DNS:168.126.63.1
<b>Ethernet Options Setting</b>	Access to COMx port using COM Redirector (access to 192.168.0.200 4001)	Operation Mode: COM Redirector Local Port: 4001
	TCP Server Local Port: 4001	Operation Mode: TCP Client Target IP: 192.168.0.100 Target Port: 4001
	Operation Mode: TCP Client Target IP: 192.168.0.200 Target Port: 4001	Operation Mode: TCP Server Local Port: 4001
	Operation Mode: UDP Server Local Port: 4001	Operation Mode: UDP Client Target IP: 192.168.0.100 Target Port: 4001
	Operation Mode: UDP Client Target IP: 192.168.0.200 Target Port: 4001	Operation Mode: UDP Server Local Port: 4001

\* Setting values are examples to help you understand. The value may vary depending on the product and site.

Various communication is available through COM Redirector, Server/Client, and UDP Server/Client is possible as shown above.

### Connection between CAN equipment(CAN Buses)

To enable communication between different CAN Buses, set two eCANs to Server and Client(Target: Server) and connect to AP.



Category	eCAN	PC Connected AP
<b>Network</b>	Connection Type: Static Device IP Address: 192.168.0.100 Subnet Mask: 255.255.255.0 Gateway: 192.168.0.1 DNS:168.126.63.1	Connection Type: Static Device IP Address: 192.168.0.200 Subnet Mask: 255.255.255.0 Gateway: 192.168.0.1 DNS:168.126.63.1
<b>Ethernet Options Setting</b>	Operation Mode: TCP Server Local Port: 4001	Operation Mode: TCP Client Target IP: 192.168.0.100 Target Port: 4001
	Operation Mode: TCP Client Target IP: 192.168.0.200 Target Port: 4001	Operation Mode: TCP Server Local Port: 4001
	Operation Mode: UDP Server Local Port: 4001	Operation Mode: UDP Client Target IP: 192.168.0.100 Target Port: 4001
	Operation Mode: UDP Client Target IP: 192.168.0.200 Target Port: 4001	Operation Mode: UDP Server Local Port: 4001

\* Setting values are examples to help you understand. The value may vary depending on the product and site.

**Class A equipment**  
 Sellers or users should be aware of the fact that this device is intended for industrial use(Class A), not for residential use.

# -----APPENDIX-----

## 1. Specification

### Communication (Ethernet)

LAN Port	10/100Mbps, MDI/MIDX RJ-45 Port x 1EA
Network Connection	Static IP, Dynamic IP

### Communication (CAN)

CAN Port	1 Port DB-9 (Male)
Speed	Max. 1Mbps (We recommend 5ms for communication interval between Frames)
Spec	CAN 2.0 A/B
Signals	CAN_H, CAN_L

### Hardware

Power	5V 1A DC Input, Power consumption: 0.95W
Power Connector DC Type	Outer $\Phi$ 3.5mm, Internal $\Phi$ 1.35mm 
Dimension (W x L x H)	40.9 x 74.5 x 16.5mm (1.61 x 2.93 x 0.65in)
Weight	32.1g (1.13oz)
Operating Temperature	-40 ~ 85°C (-40 ~ 185°F)
Humidity	Max. 90% R.H
LED	RDY(Yellow), DATA(Red), LINK(Green)
Protection	$\pm$ 15kV ESD Protection

### Reset Button

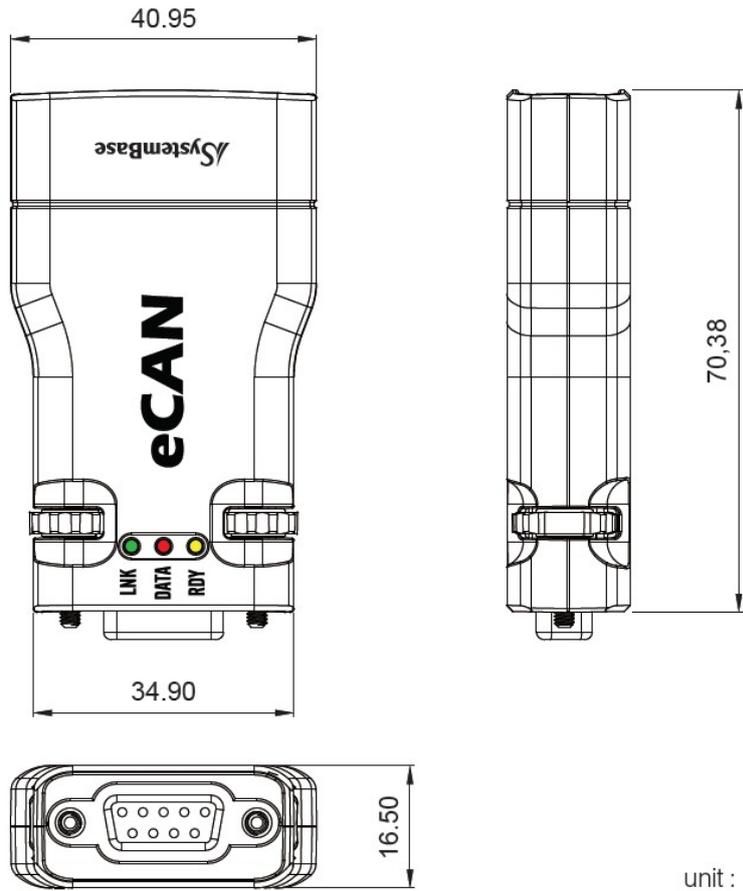
Feature	Warm Booting	Factory Default
Operation	Press less than 3 sec	Press more than 3 sec
Result	eCAN restart	eCAN factory initialization

**Software**

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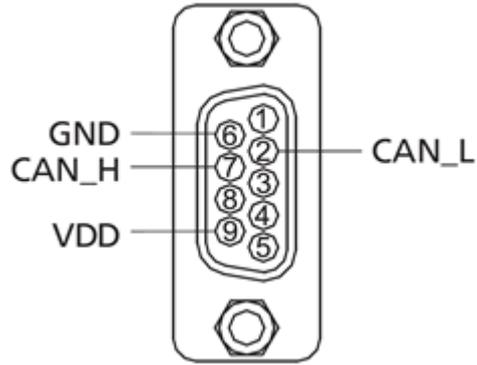
Protocol	TCP, UDP, ICMP, DHCP, HTTP
Operation Mode	COM Redirector, TCP Server/Client, UDP Server/Client
Utility	COM Redirector
Configuration	Web, eCANConfig

## 2. Dimension



unit : mm

### 3. CAN Port Pin Specification



CAN DB9 Male

Pin No.	Signal	Description
2	CAN_L	CAN Low Signal
6	GND	Ground
7	CAN_H	CAN High Signal
9	VCC	5VDC Power

## 4. Setting Menu

The main menus of Network Setup are as follows:

Menu	Default	Description
Device Name	eCAN	Set the name of the device.
MAC Address	Own Address	Displays own MAC Address.
Connection Type	Static IP	Select the IP type to set for the device. Static IP is a fixed IP, and DHCP is an automatic IP mode which is assigned by the AP.
Device IP Address	192.168.0.223	Sets the Static IP address of the equipment. (If Connection Type is Static IP, enter the IP address directly. If it is DHCP, it is unchangeable)
Subnet mask	255.255.255.0	Sets the subnet mask address of the equipment. (If the Connection Type is Static IP, enter the subnet mask directly. If it is DHCP, it is not able to change it)
Gateway	192.168.0.254	Set the gateway address of the equipment. (If the Connection Type is Static IP, enter the gateway address directly. If it is DHCP, it is not able to change it)
DNS	168.126.63.1	Set the IP address of the server that provides the Domain Name Service(DNS).

The main menus of CAN Settings are as follows:

Menu	Default	Description
Operation Mode	COM Redirector	<p>Set the operation protocol.</p> <p><b>COM Redirector</b> Enables a PC in a Windows environment to use communication over Ethernet through a virtual COM Port(VCP).</p> <p><b>TCP Server</b> eCAN acts as a TCP Server and waits for connection from Clients on the network. The socket number waiting for a connection is set at [Local Port] and data can be sent and received when the socket connection is complete.</p> <p><b>TCP Client</b> When a particular server on the network waits for a connection, eCAN acts as a client of socket and attempts to connect with the IP address and socket number of the Server which is set. Data can be sent and received when the socket connection is complete. The IP and port number of the Server to request access to are set at [Target IP/Target Port].</p> <p><b>UDP Server</b> The eCAN acts as a UDP server and waits for UDP connections from the client on the network. The socket number to open is set in [Local Port].</p> <p><b>UDP Client</b> The IP and port number of the other party you want to communicate with is set in [Target IP/Target Port].</p> <p>We recommend using Static IP rather than DHCP for COM Redirector, TCP Server, UDP Server.</p>
Local Port	4001	Specify the number assigned to the port. Use this port to wait for network connection in TCP Server and UDP mode.
Target IP	0.0.0.0	Specify the IP address of the destination to connect to in TCP Client mode.
Target Port	4001	Specify the port of the destination to connect to in TCP Client mode.
TCP Alive Check Time	60	<p>After TCP socket connection is complete, it checks the network status at the set number of seconds to terminate or reset the socket connection if a network abnormality is determined.</p> <p>This feature is not used when set to 0.</p> <p>Keep Alive is applied when used as TCP Server, Client.</p>

TCP No delay	Disable	<p>Decide whether to collect and process data sent and received over Ethernet during TCP communication.</p> <p>When set to Disable, TCP transmission and reception data are collected. So there is a delay between Ethernet transmission and CAN transmission. But it is advantageous for high speed data and packet wise data transmission.</p> <p>When set to Enable, TCP transmission data is processed immediately, so the delay between Ethernet transmission and CAN transmission get minimized. However, it is disadvantageous for high speed and packet wise data transmission.</p>
Baudrate	125 kbps	<p>Set the communication speed of CAN port. (option: 20, 50, 100, 125, 200, 250, 300, 500, 800, 1000 kbps)</p>
Acceptance Spec	B	<p>Set the Acceptance Spec of CAN port. (option: A, B)</p>
Acceptance Filtering ID (hex value)	0	<p>Set the Acceptance Filtering ID of CAN Port. (setting range: 0x0~0x7FF, 0x0~1FFFFFFF according to Acceptance Spec)</p>
Acceptance Filtering MASK (hex value)	0	<p>Set the Acceptance Filtering MASK of CAN Port. (setting range: 0x0~0x7FF, 0x0~1FFFFFFF according to Acceptance Spec)</p>

## 5. eCAN Frame Structure

### Ethernet Mode

The eCAN Frame can be broadly divided into eCAN Data Frame and eCAN Error Frame.

eCAN Data Frame defines STD DATA, STD REMOTE, EXT DATA, EXT REMOTE.

The eCAN Error Frame is the definition of an Error Frame.

Below is a table of the above descriptions and VALUE is the value of the corresponding TYPE.

eCAN Frame	CAN Frame TYPE	VALUE
eCAN Data Frame	STD DATA	0x04
	STD REMOTE	0x05
	EXT DATA	0x06
	EXT REMOTE	0x07
eCAN Error Frame	Error Frame	0xFF

### eCAN Data Frame

The total length of the eCAN Data Frame is 14bytes and consists of TYPE · ID · DLC · DATA.

### eCAN Error Frame

The total length of the eCAN Error Frame is 14bytes and consists of TYPE · Status · REC · TEC · LEC.

When Request, it request 14bytes including Type(0xFF).

Ex) FF 00 00 00 00 00 00 00 00 00 00 00 00 00 (hex)

### eCAN Data Frame Structure

Set TYPE to 1byte because the VALUE of Data Frame is 0x04~0x07.

Set ID to 4bytes, as the minimum sum of STD Frame value(13bits) and the EXT Frame value.

TYPE VALUE	CAN Frame	eCAN Frame	Available ID Range
0x04	STD DATA	eCAN Data Frame	0x00000000~0x000007FF
0x05	STD REMOTE		
0x06	EXT DATA		0x00000000~0x1FFFFFFF
0x07	EXT REMOTE		
0xFF	Error Info	eCAN Error Frame	-

Set DLC to 1byte which is a value between 0x00~0x08.

Set DATA to max. 8byte which is consists of 0~8byte.

The table below summarizes the explanation above.

TYPE	ID	DLC	DATA
1Byte	4Byte	1Byte	8Byte

**Ex)** STD DATA, ID=123, DLC=6, Data=0x31 0x32 0x33 0x34 0x35 0x36

Send - 04 00 00 01 23 06 31 32 33 34 35 36 00 00 (hex)

Receive - 04 00 00 01 23 06 31 32 33 34 35 36 00 00 (hex)

**eCAN Error Frame Structure**

Status represents the current state and its values are described in the table below.

Set Type to 1byte, the minimum value.

Value	Description
0x00	Error Active
0x01	Error Passive
0x02	Error counter reached limit of 96
0x03	Error Passive, Error counter reached limit of 96
0x04	Bus off State
0x05	Error Passive, Bus off State
0x06	Error counter reached limit of 96, Bus off State
0x07	Error Passive, Error counter reached limit of 96, Bus off State

**Bus off State gets Clear when you terminate the socket connection and reconnect.**

**REC (Rx Error Counter)**

It is the reception error counter.

If CAN message received successfully → REC = REC -1

When the receiver detects an error and sends the Error Flag → REC = REC + 1

When the receiver first detects an error and sends the Error Flag → REC= REC + 8

**TEC (Tx Error Counter)**

It is the send error counter.

If CAN message transmitted successfully → TEC = Tec-1

When the transmitter detects an error and sends the Error Flag → TEX= TEC +8

**LEC**

It is Last Error Code, displaying the last error.

Value	Description
0	No Error
1	Stuff Error. occurs when a message containing the same 5 consecutive bits is received
2	Form Error. occurs when a message is received outside the specified format
3	Ack Error. occurs when the relative device did not Ack for the message sent
4	Bit Error. occurs when a High (Bit1) value is sent but the level of the bus is LOW
5	Bit Error. occurs when a High (Bit0) value is sent but the level of the bus is HIGH
6	CRC Error. Occurs when the CRC value of the received message and the inspected value do not match

The table below summarizes the explanation above.

TYPE	Status	REC	TEC	LEC
1Byte	1Byte	1Byte	1Byte	1Byte

**VCP Mode**

**Frames in VCP Mode are configured differently from frames in Ethernet Mode.**

The eCAN Frame can be broadly divided into eCAN Data Frame and eCAN Error Frame.

eCAN Data Frame defines STD DATA, STD REMOTE, EXT DATA, EXT REMOTE.

The eCAN Error Frame is the definition of an Error Frame.

eCAN Frame	CAN Frame TYPE	VALUE
eCAN Data Frame	STD DATA	0x74 (t)
	STD REMOTE	0x54 (T)
	EXT DATA	0x65 (e)
	EXT REMOTE	0x45 (E)
eCAN Error Frame	Error Frame	0x21 (!)

**eCAN Data Frame**

The total length of the eCAN Error Frame is 9bytes and consists of TYPE(1) · Status(1) · REC(2) · TEC(2) · LEC(2) · CR(1).

When Request, it request '!(0x21) 1byte.

**Ex)** 0x21 (! ASCII)

**eCAN Data Frame Structure**

The total length of the eCAN Data Frame is 6~22bytes and consists of TYPE · ID · DLC · DATA · CR(0x0D).

**eCAN Error Frame**

Set TYPE to 1byte.

Set ID to STD Frame value(3byte, ASCII) or to EXT Frame value(8byte, ASCII).

TYPE VALUE	CAN Frame	eCAN Frame	Available ID Range
0x74	STD DATA	eCAN Data Frame	000(0x303030) ~ 7FF(0x374646)
0x54	STD REMOTE		
0x65	EXT DATA		00000000 (0x3030303030303030) ~
0x45	EXT REMOTE		1FFFFFFF (0x3146464646464646)
0xFF	Error Info	eCAN Error Frame	-

Set DLC to 0x30~0x38(0 ~ 8 ASCII) 1byte.

DATA consists of 0~16bytes, and converts each 1byte HEX value of the data to be transmitted into 2bytes of ASCII code.

-1byte to send 0x31 → 0x3331 (31 ASCII)

The table below summarizes the explanation above.

TYPE	ID	DLC	DATA	CR
1Byte	3Byte or 8Byte	1Byte	0Byte ~ 16Byte	1Byte

**Ex)** STD DATA, ID=12, DLC=6, Data=0x31 0x32 0x33 0x34 0x35 0x36

Send t0126313233343536(ASCII)<0x0D>

74 30 31 32 36 33 31 33 32 33 33 34 33 35 33 36 0D (hex)

**eCAN Error Frame Structure**

Set TYPE to 1byte as the minimum value.

Status represents the current state and its values are described in the table below.

Value	Description
0x30	Error Active

0x31~0x36	Error Passive
0x37	Bus off State

**REC (Rx Error Counter)**

It is the reception error counter.

It consists of 2bytes, which are delivered by converting values from 0~255 to hex, and each hex value to ASCII.

If REC = 200, 0xC8(200) → 0x4338(C8)

If CAN message received successfully → REC = REC -1

When the receiver detects an error and sends the Error Flag → REC = REC + 1

When the receiver first detects an error and sends the Error Flag → REC = REC + 8

**TEC (Tx Error Counter)**

It is the send error counter.

It consists of 2bytes, which are delivered by converting values from 0~255 to hex, and each hex value to ASCII.

If TEC = 200, 0xC8 (200) → 0x4338 (C8)

If CAN message sent successfully → TEC = Tech-1

When transmitter detects an error and send the Error Flag → TEX= TEC +8

**LEC**

It is Last Error Code, displaying the last error.

Value	Description
0x3030	No Error
0x3031	Stuff Error. occurs when a message containing the same 5 consecutive bits is received
0x3032	Form Error. occurs when a message is received outside the specified format
0x3033	Ack Error. occurs when the relative device did not Ack for the message sent
0x3034	Bit Error. occurs when a High (Bit1) value is sent but the level of the bus is LOW
0x3035	Bit Error. occurs when a High (Bit0) value is sent but the level of the bus is HIGH
0x3036	CRC Error. Occurs when the CRC value of the received message and the inspected value do not match

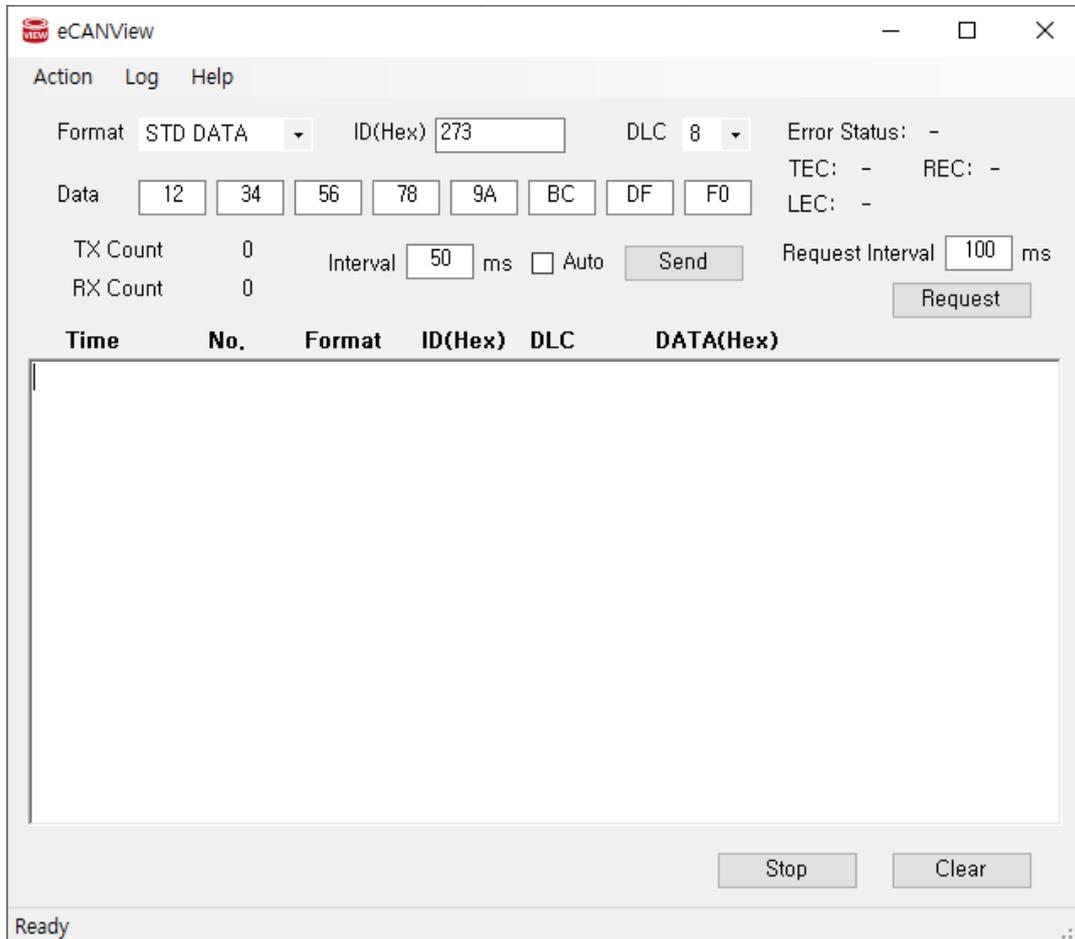
The table below summarizes the explanation above.

TYPE	Status	REC	TEC	LEC	CR
1Byte	1Byte	2Byte	2Byte	2Byte	1Byte

## 6. eCANView

This chapter briefly describes how to test sending and receiving CAN Frames using eCANView.

### Main Window Configuration



Action: Selects Connect(Ethernet/VCP) or Disconnect.

Help: Selects the About menu.

Format: Selects the type of CAN Frame.

ID: Specifies the ID of CAN Frame

DLC: Specifies the Data length of CAN Frame

Data: Specifies the CAN Frame Data to Hex value.

TX Count: Counts CAN frames sent from eCANView to eCAN.

RX Count: Counts CAN frames sent from eCAN to eCANView..

Interval: Sets the auto transmission mode and period.

Send: Forward configured CAN frames to eCAN.

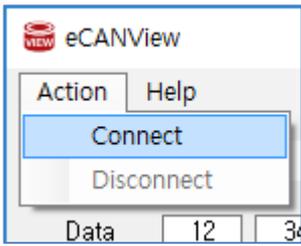
Request Interval: The interval which error status information is requested.

Request: Starts or stops the Error Status information request.

Stop: Stops the output of the CAN Frame on the screen.

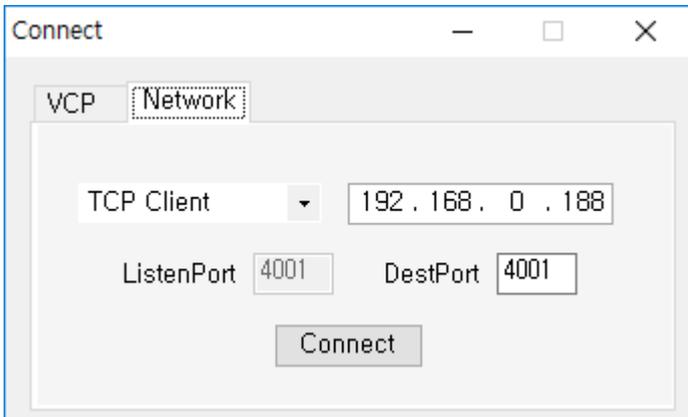
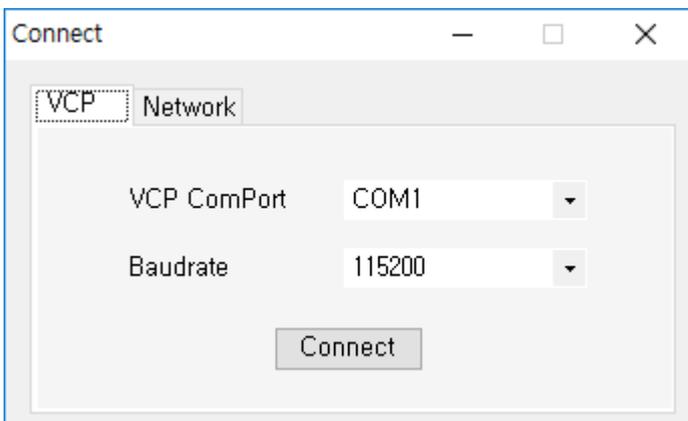
Clear: Initialize the CAN Frame, TX Count and RX Count output on the screen.

### Action



You can select either the Connect menu or the Disconnect menu.

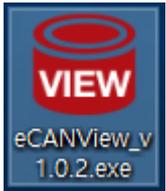
### Connect



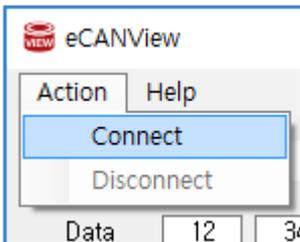
Depending on the operating mode of the eCAN, you can specify a VCP, TCP Server/Client, UDP connection.

### Example of Use

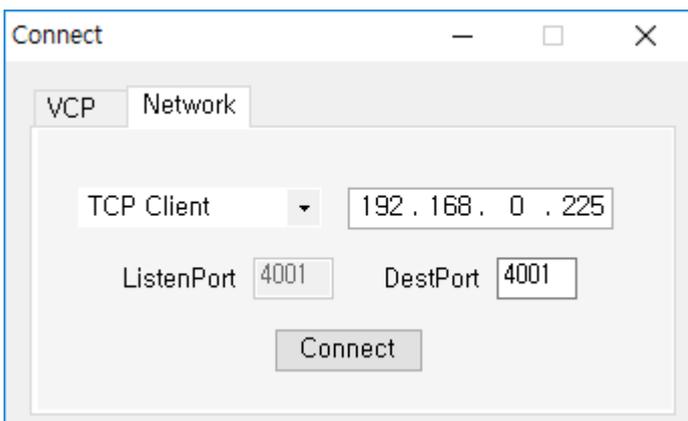
1. Connect two eCANViews to the network and set them up as below.  
eCAN1 = TCP Server - 192:168:0;225:4001, 250kbps, set Spec B and reboot  
eCAN2 = TCP Server - 192:168:0;226:4001, 250kbps, set Spec B and reboot
2. Connect the CAN ports of eCAN1 and eCAN2 through the cable.
3. Run eCANView.



4. Select the Action – Connect menu.



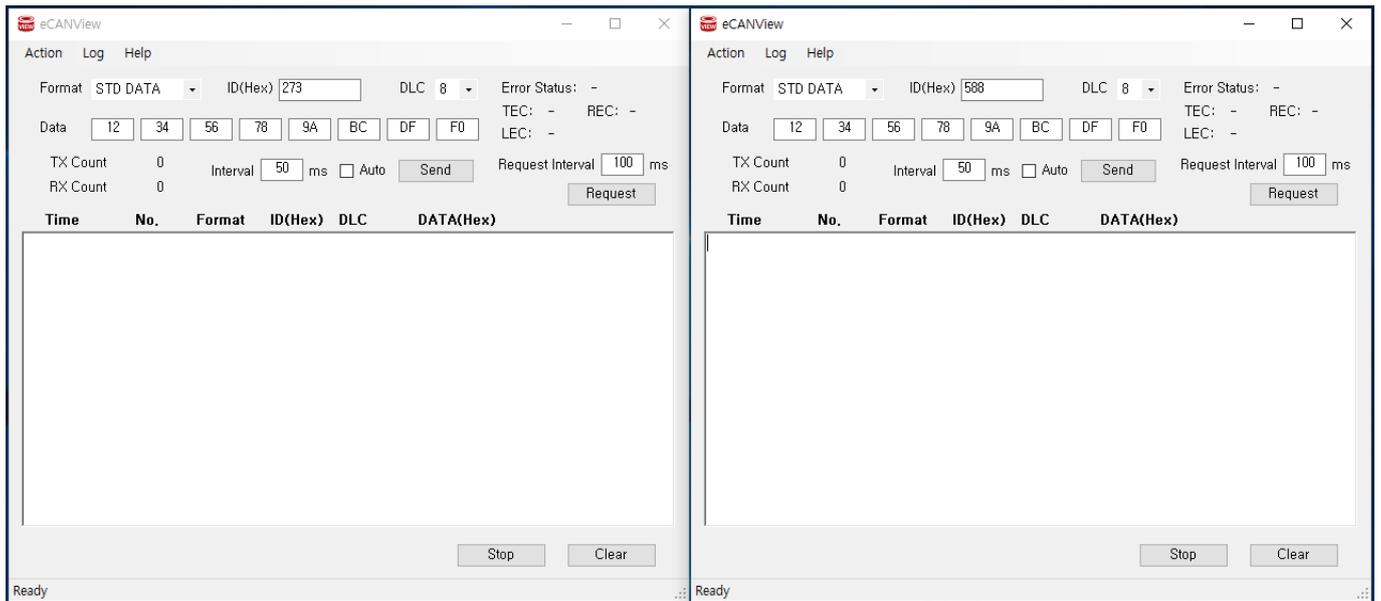
5. Select the Network tab, specify the address and Port No. so you can connect to eCAN1, and press the [Connect] button.



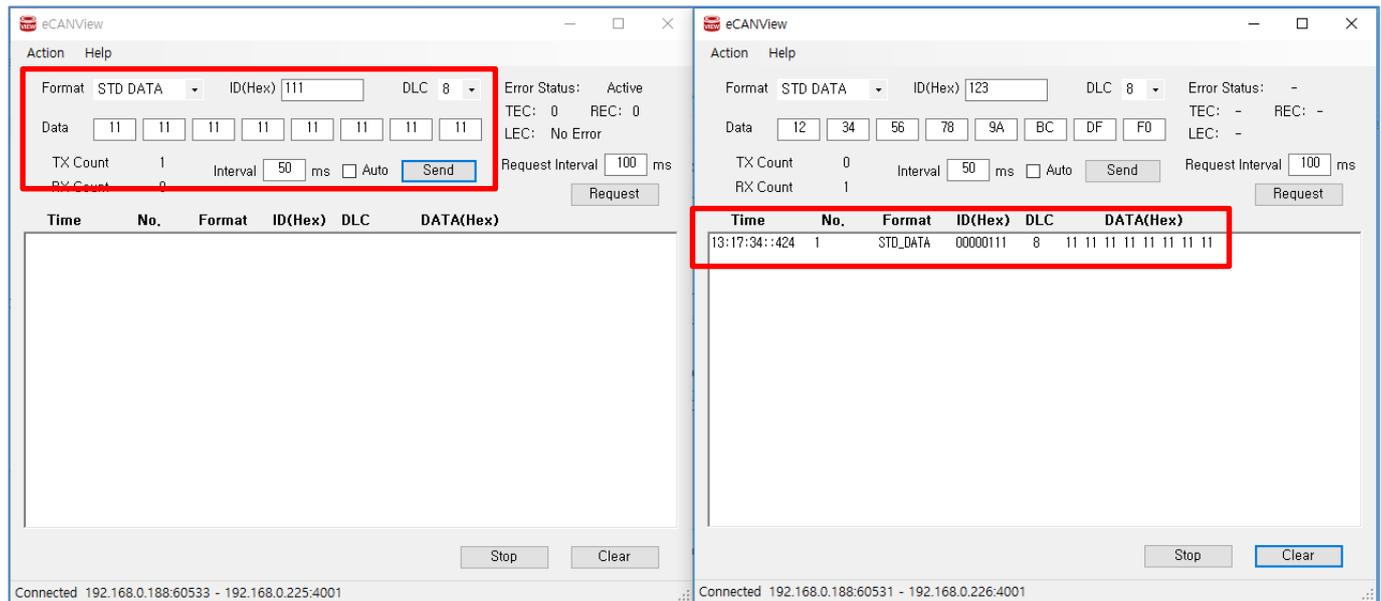
6. Check the information on the bottom Status bar to ensure that it is connected properly.



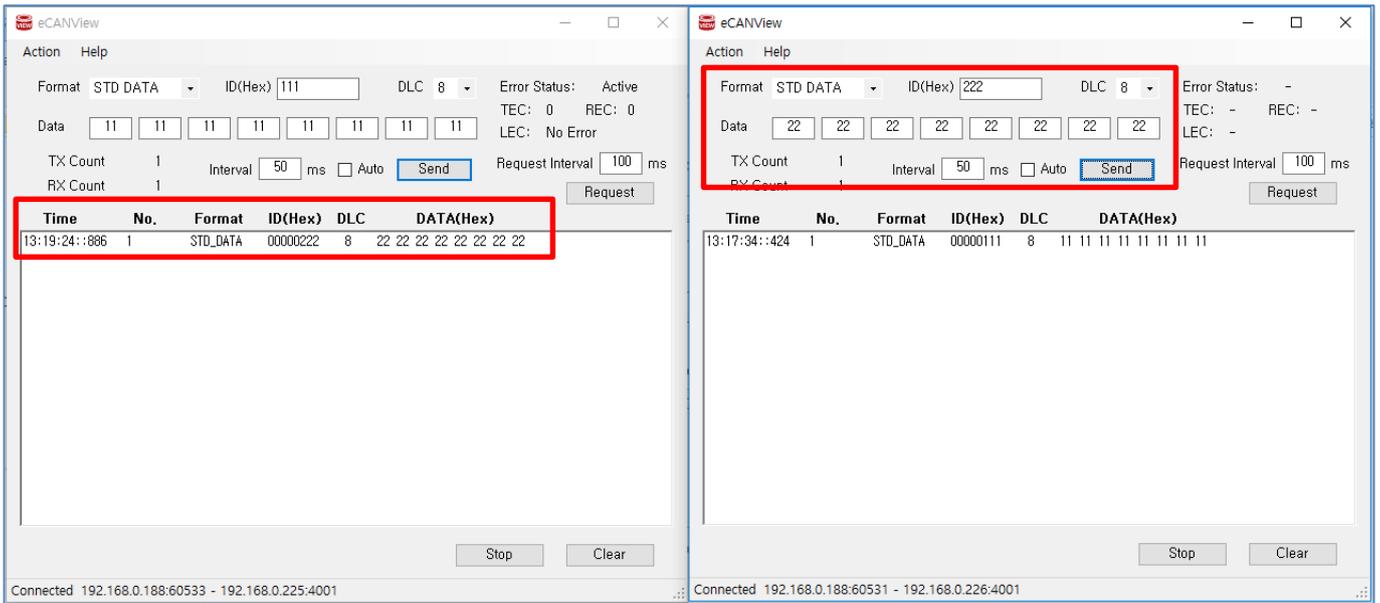
7. To connect eCAN2, perform steps 3~6 again with the address of eCAN2.



8. Configure the CAN Frame in the eCANView connected with eCAN1 and press the [Send] button.



9. Configure the CAN Frame in the eCANView connected with eCAN2 and press the [Send] button.



### 10. Save Communication Log

The communication screen in eCANView shows 100,000 communication data. If there are more than 100,000 data, the screen will clear and display again. You can save communication data on the screen through [Log → Save] in the menu.

**\*If communication between eCANs is not carried out normally, please check the eCAN settings, or set the termination resistance by switching switch no.2 and 3 on the back of the product to ON.**

## 7. Certification

- **KC**

Number: R-R-STB-eCANV10

- **CE**

Standard: EN 55032:2015, Class A

EN 55035:2017

EN 61000-3-2:2014

EN 61000-3-3:2013

## 8. Copyright

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