Serial Commands List

TS-series Touch Screens (21")

RS232

Pin 1	DCD
Pin 2	RXD
Pin 3	TXD
Pin 4	DTR
Pin 5	GND
Pin 6	DSR
Pin 7	RTS
Pin 8	CTS
Pin 9	RI

RS232 Pinout (9 Pin Male)

Pin 1   Pin 5

Pin 6   Pin 9

Before operating the unit, please read this manual thoroughly, and retain it for future reference.
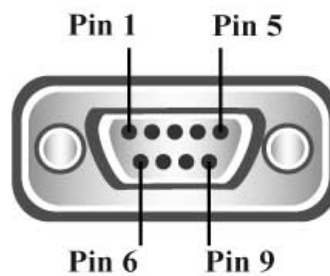
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Serial Interface Communication Protocol

This document defines all the command and messages exchanged between the Primary (a PC or the other controller) and the Secondary (the displays).

It also describes the ways to send or read the commands or the messages.

Protocol definition

SICP stands for "Serial Interface Communication Protocol".

The protocol is specifically designed to allow data communication in half duplex multi-point environments, but it can also be used for half duplex point-to-point RS-232C communication.

Communication characteristics

A half duplex communication is implemented starting from the concept of a Primary-Secondary structure, where the display is supposed to be the Secondary.

The first action is always taken by the Primary, which can be either a PC or any controlling device (acting as server) interfaced to the monitor. After sending a command or a request in the appropriate format the Primary receives from the Secondary an acknowledgment, which tells the transmitter whether the command is not valid (or not executable, anyway) or it is accepted. In case of a request, the requested information is sent back and it becomes the acknowledgment by itself.

How to connect external equipment

Female Pin number	Male Pin number
2 <--> 2	
3 <--> 3	
5 <--> 5	

Pin 1	RI
Pin 2	TXD
Pin 3	RXD
Pin 4	DSR
Pin 5	GND
Pin 6	DTR
Pin 7	CTS
Pin 8	RTS
Pin 9	Power Input /DCD

RS232 Pinout (9 Pin Female)

Pin 5   Pin 1
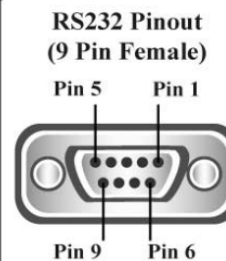
Pin 9   Pin 6

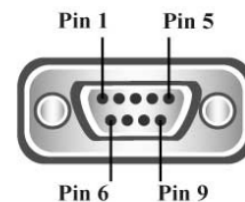*[Display Side]*

Hardware Protocol

Baud rate : 9600 bps
Data bits : 8 bit
Parity bits : None
Stop bits : 1 bit
Handshake : None

Pin 1	DCD
Pin 2	RXD
Pin 3	TXD
Pin 4	DTR
Pin 5	GND
Pin 6	DSR
Pin 7	RTS
Pin 8	CTS
Pin 9	RI

RS232 Pinout (9 Pin Male)

Pin 1   Pin 5

Pin 6   Pin 9

[Control Device Side]

Serial Command Protocol

Transmission Formats

This is the format that the computer will send to the display to execute commands.
The format for this command transmission is as follows (total 13 byte):

ex) <STX>001PWRWOFF0<ETX> (Set ID : 1 , Power Off Send)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f	0	0	1	P	W	R	W	O	F	F	0	0x0d
Hex	ASCII (capital letter)											Hex

- STX: Start of Text (0x0f)
- ID1 ~ ID3: Set ID (001~100)
- CM1 ~ CM3: Command (e.g. PWR, MIN, MUT)
- R/W: Read/Write (
    Only use "Read"(R) or "Write" (W) as set forth in this document
- DA1 ~ DA3: Data (Values)
- IND: Index
- ETX: End of Text (0x0d)

OK Acknowledgment

An acknowledgment will be sent by the display to the computer to verify that the command has been successfully received and executed. This format for this acknowledgment is as follows:

ex) <STX>001PWR#-ON#<ETX> (Set ID: 1, Power ON Acknowledgment)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f	0	0	1	P	W	R	#	-	O	N	#	0x0d
Hex	ASCII (capital letter)											Hex

Error Acknowledgment

The Error Values will be sent by the display to the computer to confirm that the command has not been successfully received and/or executed. The format for Error Values is as follows:

ex) <STX>001PWRERROR<ETX> (Set ID: 1, Power Off Error)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f	0	0	1	P	W	R	E	R	R	O	R	0x0d
Hex	ASCII (capital letter)											Hex

Serial Command Protocol, cont.

Command List

Power On/Off (PWR)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**P**	**W**	**R**					0	0x0d
Hex	ASCII (capital letter)											Hex

- ID1 ~ ID3: Set ID* ("001" ~ "100")

 * *NOTE: When sending a Power ON or OFF command, all displays in the RS232 daisy-chain can be addressed by entering "000" as the Set ID value. No acknowledgment will be received when this "Wild Card" command is sent.*

- R/W: "W" (Write)
- DA1 ~ DA3 (Write): "-ON": Power On / "OFF": Power Off
- IND: "0"

> Ex) <STX>001PWRWOFF0<ETX> (Write: ID: 001, Power Off)
> Acknowledge => <STX>001PWR#OFF#<ETX>

Power State (PWS)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**P**	**W**	**S**	R	0	0	0	0	0x0d
Hex	ASCII (capital letter)											Hex

- ID1 ~ ID3: Set ID* ("001" ~ "100")
- DA1 ~ DA3 : "000" (don't care)
- IND : "0" (don't care)

 * *NOTE: When sending a Power ON or OFF command, all displays in the RS232 daisy-chain can be addressed by entering "000" as the Set ID value. No acknowledgment will be received when this "Wild Card" command is sent.*

- R/W: "R" (Read)
- DA1 ~ DA3 (Read): "-ON": Power On / "OFF": Power Off

> Ex) <STX>001PWSR0000<ETX> (ID:001 , Get Power Status)
> Acknowledge => <STX>001PWS#OFF#<ETX>

Serial Command Protocol, cont.

Source Change (MIN)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**M**	**I**	**N**						0x0d
Hex	ASCII (capital letter)											Hex

- ID1 ~ ID3: Set ID ("001" ~ "100")
- R/W: "W" (Write)
- DA1 ~ DA3 (Write): "-PC": PC-RGB / "HD1": HDMI1 / "HD2": HDMI2 / "DVI": DVI (Option)
- IND: "0"

    Ex) \<STX>001MINWHD10\<ETX> (Write: ID: 001, Source HDMI1)
        Acknowledge => \<STX>001MIN#HD1#\<ETX>

Source State (MIS)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**P**	**W**	**S**	R	0	0	0	0	0x0d
Hex	ASCII (capital letter)											Hex

- ID1 ~ ID3: Set ID* ("001" ~ "100")
- DA1 ~ DA3 : "000" (don't care)
- IND : "0" (don't care)
- R/W: "R" (Read)
- DA1 ~ DA3 (Read): "-PC": PC-RGB / "HD1": HDMI1 / "HD2": HDMI2 / "DVI": DVI (Option)

    Ex) \<STX>001MISR0000\<ETX> (Read: ID: 001, Get Source Status)
        Acknowledge => \<STX>001MIS#HD1#\<ETX>

Serial Command Protocol, cont.

Virtual Remote Control (RMT)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**R**	**M**	**T**	W				0	0x0d
Hex	ASCII (capital letter)											Hex

- ID1 ~ ID3: Set ID ("001" ~ "100")
- R/W: "W" (Write*)
  NOTE: This command is write-only
- DA1 ~ DA3: "MEN" (Menu) / "SOU" (Source) / "LEF" (Left & reduce Volume)
  "RIG" (Right & increase Volume) / "ENT" (Enter)
  "-UP" (Up) / "DOW" (Down) / "EXI" (Exit)

  Ex) <STX>001RMTWSOU0<ETX> (Write: ID: 001, Remote Source Button)
  Acknowledge => <STX>001RMT#SOU#<ETX>

Signal Status (SGS)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**S**	G	**S**	R	**0**	**0**	**0**	0	0x0d
Hex	ASCII (capital letter)											Hex

- ID1 ~ ID3: Set ID (001~100)
- R/W: "R" (Read*)
  *NOTE: This command is read-only
- DA1 ~ DA3: "000" (don't care)
- IND: "0" (don't care)

  Ex) <STX>001SGSR0000<ETX> (ID: 001, Get Signal Status)
  Acknowledge => <STX>001SGS#COM#<ETX>

- DA1 ~ DA3: "000": Power Off / "001": Normal / "002": No Signal / "003": DPMS / "004": Abnormal

Serial Command Protocol, cont.

Volume Adjust (VOL)

STX	ID1	ID2	ID3	**CM1**	**CM2**	**CM3**	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**V**	**O**	**L**					0	0x0d
Hex				ASCII (capital letter)								Hex

- ID1 ~ ID3: Set ID ("001" ~ "100")
- R/W: "W" (Write)
- DA1 ~ DA3 (Write): "000" ~ "100" (Mute: When Volume "000")
- IND: "0" (don't care)

       Ex) <STX>001VOLW1000<ETX> (Write: ID: 001, Volume 100)
           Acknowledge => <STX>001VOL#100#<ETX>

Volume State (VOS)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**V**	**O**	**S**	R	0	0	0	0	0x0d
Hex				ASCII (capital letter)								Hex

- ID1 ~ ID3: Set ID (001~100)
- R/W: "R" (Read*)
      *NOTE: This command is read-only
- IND: "0" (don't care)

       Ex) <STX>001VOSR0000<ETX> (ID: 001, Get Volume)
           Acknowledge => <STX>001VOS#050#<ETX>

- DA1 ~ DA3: Volume Value

Serial Command Protocol, cont.

Get Current Temperature (TPS)

STX	ID1	ID2	ID3	**CM1**	**CM2**	**CM3**	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**T**	**P**	**S**	R	0	0	0	0	0x0d
Hex	ASCII (capital letter)											Hex

- ID1 ~ ID3: Set ID ("001" ~ "100")
- R/W: "R" (Read*)
    - *NOTE: This command is read-only*
- DA1 ~ DA3: "000" (don't care)
- IND: "0" (don't care)

    Ex) <STX>001TPSR0000<ETX> (Read: ID: 001, Read Current Temperature)
        Acknowledge => <STX>001TPS#050#<ETX>

- DA1 ~ DA3: Temperature Value (Celsius)

Set Fan Control (FAN)

STX	ID1	ID2	ID3	**CM1**	**CM2**	**CM3**	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**F**	**A**	**N**					0	0x0d
Hex	ASCII (capital letter)											Hex

- ID1 ~ ID3: Set ID ("001" ~ "100")
- R/W: "W" (Write) "R" (Read)
- DA1 ~ DA3 (Write): "AUT": Auto / "-ON": Fan On / "OFF": Fan Off
- DA1 ~ DA3 (Read): "000"
- IND: "0" (don't care)

Ex) <STX>001FANWAUT0<ETX> (Write: ID: 001, Fan Control Auto)
 Acknowledge => <STX>001FAN#AUT#<ETX>
Ex) <STX>001FANR0000<ETX> (Read: ID: 001, Fan Control Auto)
 Acknowledge => <STX>001FAN#AUT#<ETX>

Get Fan Control (FAS)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**F**	A	S	R	0	0	0	0	0x0d
Hex	ASCII (capital letter)											Hex

- ID1 ~ ID3: Set ID ("001" ~ "100")
- R/W: "R" (Read)
- DA1 ~ DA3 (Read): "000"
- IND: "0" (don't care)

    Ex) <STX>001FANR0000<ETX> (Read: ID: 001, Fan Control Auto)
        Acknowledge => <STX>001FAN#AUT#<ETX>

- DA1 ~ DA3: "AUT": Auto / "-ON": Fan On / "OFF": Fan Off

Set Active Temperature (TAT) - Fan Control (Auto)

STX	ID1	ID2	ID3	**CM1**	**CM2**	**CM3**	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**T**	**A**	**T**					0	0x0d
Hex	ASCII (capital letter)											Hex

- ID1 ~ ID3: Set ID ("001" ~ "100")
- R/W: "W" (Write)
- DA1 ~ DA3 (Write): Temperature Value ("000" ~ "100")
- IND: "0" (don't care)

    Ex) <STX>001TATW0500<ETX> (Write: ID: 001, Active Temperature 50)
        Acknowledge => <STX>001TAT#050#<ETX>

Serial Command Protocol, cont.

Get Active Temperature (TAS) - Fan Control (Auto)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**T**	**A**	**S**	R	0	0	0	0	0x0d
Hex	ASCII (capital letter)											Hex

- ID1 ~ ID3: Set ID ("001" ~ "100")
- R/W: "R" (Read)
- IND: "0" (don't care)

    Ex) <STX>001TASR0000<ETX> (Read: ID: 001, Active Temperature 50)
        Acknowledge => <STX>001TAS#050#<ETX>

- DA1 ~ DA3: Active Temperature Value

Set Hysteresis Temperature (THY) - Fan Control (Auto)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**T**	H	Y	W				0	0x0d
Hex	ASCII (capital letter)											Hex

- ID1 ~ ID3: Set ID ("001" ~ "100")
- R/W: "W" (Write)
- DA1 ~ DA3 (Write): Hysteresis Value ("000" ~ "100")
- IND: "0" (don't care)

    Ex) <STX>001THYW0030<ETX> (Write: ID: 001, Hysteresis Temperature 3)
        Acknowledge => <STX>001THY#003#<ETX>

Get Hysteresis Temperature (THS) - Fan Control (Auto)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**T**	**H**	**S**	R	0	0	0	0	0x0d
Hex	ASCII (capital letter)											Hex

- ID1 ~ ID3: Set ID ("001" ~ "100")
- R/W: "R" (Read)
- IND: "0" (don't care)

        Ex) <STX>001THYW0030<ETX> (Write: ID: 001, Hysteresis Temperature 3)
              Acknowledge => <STX>001THS#003#<ETX>

- DA1 ~ DA3 (Read): Hysteresis Value ("000" ~ "100")

Set Dimming Setting (DIM)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**D**	**I**	**M**	W				0	0x0d
Hex	ASCII (capital letter)											Hex

- ID1 ~ ID3: Set ID ("001" ~ "100")
- R/W: "W" (Write)
- DA1 ~ DA3 (Write): "000" ~ "100"
- IND: "0" (don't care)

        Ex) <STX>001DIMW1000<ETX> (Write: ID: 001, Dimming 100)
              Acknowledge =><STX>001DIM#100#<ETX>

Serial Command Protocol, cont.

Get Dimming Setting (DIS)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**D**	**I**	S	R	0	0	0	0	0x0d
Hex	ASCII (capital letter)											Hex

- ID1 ~ ID3: Set ID ("001" ~ "100")
- R/W: "R" (Read)
- DA1 ~ DA3 (Read): "000"
- IND: "0" (don't care)

> Ex) <STX>001DISR0000<ETX> (Read: ID: 001, Dimming 100)
> Acknowledge =><STX>001DIS#100#<ETX

Set Auto Dimming Control (ADC)

STX	ID1	ID2	ID3	**CM1**	**CM2**	**CM3**	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**A**	**D**	**C**					0	0x0d
Hex	ASCII (capital letter)											Hex

- ID1 ~ ID3: Set ID ("001" ~ "100")
- R/W: "W" (Write)
- DA1 ~ DA3 (Write): "-ON": Auto Dimming On / "OFF": Auto Dimming Off
- IND: "0" (don't care)

> Ex) <STX>001ADCW-ON0<ETX> (Write: ID: 001, Auto Dimming On)
> Acknowledge => <STX>001ADC#-ON#<ETX>

Serial Command Protocol, cont.

Get Auto Dimming Control (ADS)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**A**	**D**	S	R	0	0	0	0	0x0d
Hex	ASCII (capital letter)											Hex

- ID1 ~ ID3: Set ID ("001" ~ "100")
- R/W: "R" (Read)
- DA1 ~ DA3 (Read): "000"
- IND: "0" (don't care)

> Ex) <STX>001ADSR0000<ETX> (Read: ID: 001, Auto Dimming On)
>   Acknowledge => <STX>001ADC#-ON#<ETX>

- DA1 ~ DA3 (Read): "-ON": Auto Dimming On / "OFF": Auto Dimming Off

Set Max Ambient Setting (AMA) – Auto Dimming (On)

STX	ID1	ID2	ID3	**CM1**	**CM2**	**CM3**	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**A**	**M**	**A**					0	0x0d
Hex	ASCII (capital letter)											Hex

- ID1 ~ ID3: Set ID ("001" ~ "100")
- R/W: "W" (Write)
- DA1 ~ IND (Write): "0000" ~ "3000"

> Ex) <STX>001AMAW0400<ETX> (Write: ID: 001, Max Ambient 400)
>   Acknowledge => <STX>001AMA#0400<ETX>

Serial Command Protocol, cont.

Get Max Ambient Setting (AMS) – Auto Dimming (On)

STX	ID1	ID2	ID3	**CM1**	**CM2**	**CM3**	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**A**	**M**	**A**					0	0x0d
Hex						ASCII (capital letter)						Hex

- ID1 ~ ID3: Set ID ("001" ~ "100")
- R/W: "R" (Read)
- DA1 ~ DA3 (Read): "000"
- IND: "0" (don't care)

    Ex) <STX>001AMAR0000<ETX> (Read: ID: 001, Max Ambient 400)
        Acknowledge => <STX>001AMS#0400<ETX>

- DA1 ~ IND: Max Ambient Set Value

Set Min Ambient Setting (ANA) – Auto Dimming (On)

STX	ID1	ID2	ID3	**CM1**	**CM2**	**CM3**	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**A**	**N**	**A**					0	0x0d
Hex						ASCII (capital letter)						Hex

- ID1 ~ ID3: Set ID ("001" ~ "100")
- R/W: "W" (Write)
- DA1 ~ DA3 (Write): : "0000" ~ "3000"

    Ex) <STX>001ANAW0200<ETX> (Write: ID: 001, Min Ambient 200)
        Acknowledge => <STX>001ANA#0200<ETX>

Serial Command Protocol, cont.

Get Min Ambient Setting (ANS) – Auto Dimming (On)

STX	ID1	ID2	ID3	CM1	CM2	CM3	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**A**	N	S	R	0	0	0	0	0x0d
Hex						ASCII (capital letter)							Hex

- ID1 ~ ID3: Set ID ("001" ~ "100")
- R/W: "R" (Read)
- DA1 ~ DA3 (Read): "000"
- IND: "0" (don't care)

> Ex) <STX>001ANAR0000<ETX> (Read: ID: 001, Min Ambient 200)
>   Acknowledge => <STX>001ANS#0200<ETX>

Get Current Lux (LUX)**

STX	ID1	ID2	ID3	**CM1**	**CM2**	**CM3**	R/W	DA1	DA2	DA3	IND	ETX
0x0f				**L**	**U**	**X**	R	0	0	0	0	0x0d
Hex						ASCII (capital letter)							Hex

- ID1 ~ ID3: Set ID ("001" ~ "100")
- R/W: "R" (Read*)
     *NOTE: This command is read-only
- DA1 ~ DA3: "000"
- IND: "0"

> Ex) <STX>001LUXR0000<ETX> (Read: ID: 001, Read Current Lux)
>   Acknowledge => <STX>001LUX#0650<ETX> (650 Lux)

***If a lux sensor is not connected, the Lux value will be read as zero. Lux sensors are optional and sold separately from displays.*
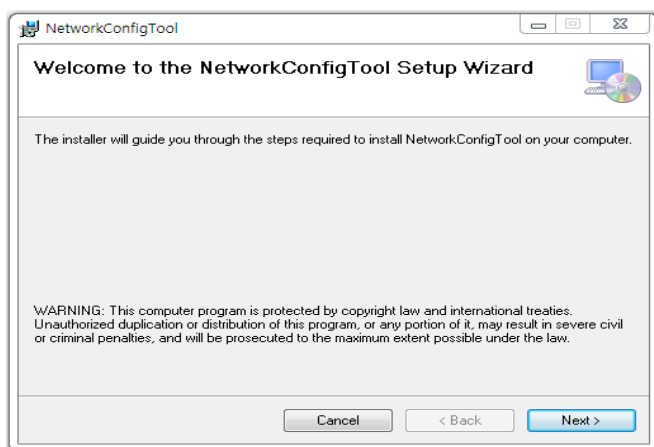
Network Config Tools

NEX-series displays and some DK, TS, and DU-series displays have an RJ45 input and TCP/IP control option.

Follow the instructions below to load the NetworkConfigTool necessary for network control. The commands listed in the serial commands list still apply when controlling via IP. Installation and setup of the Network Config Tool is necessary for the use of the displays' IP control option.
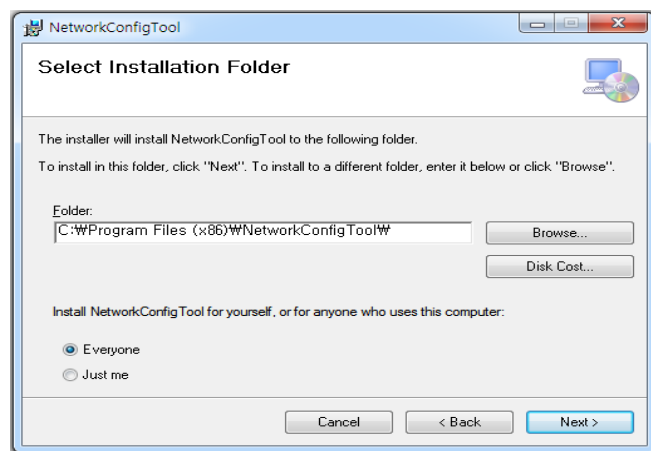
Follow the steps listed below and test network control using SICP software before removing your control PC (if using third-party control system).

1. Installing NetworkConfigTool

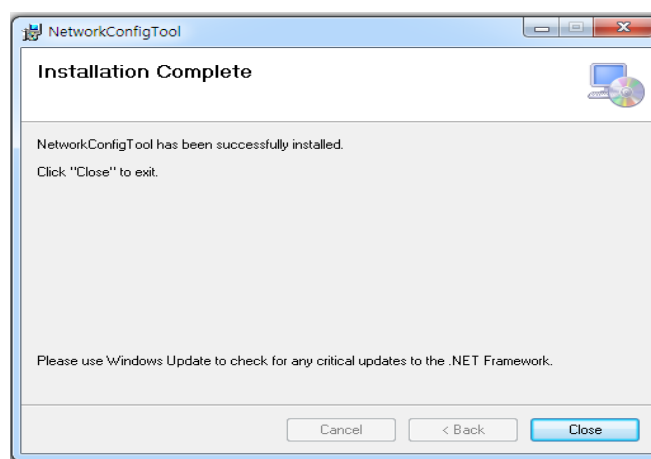**Step 1.** Run the file named "Setup.exe" and follow the instruction below:

Step 2. Click "Next"

Step 2. Select the folder you wish to save the file in. Click "Install" if you are ok with the designated folder.
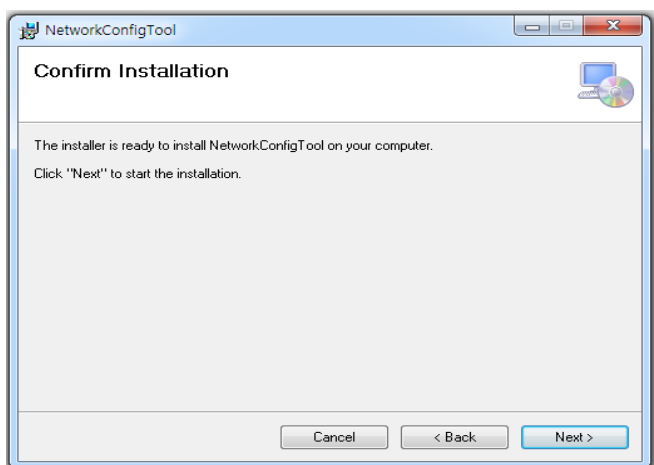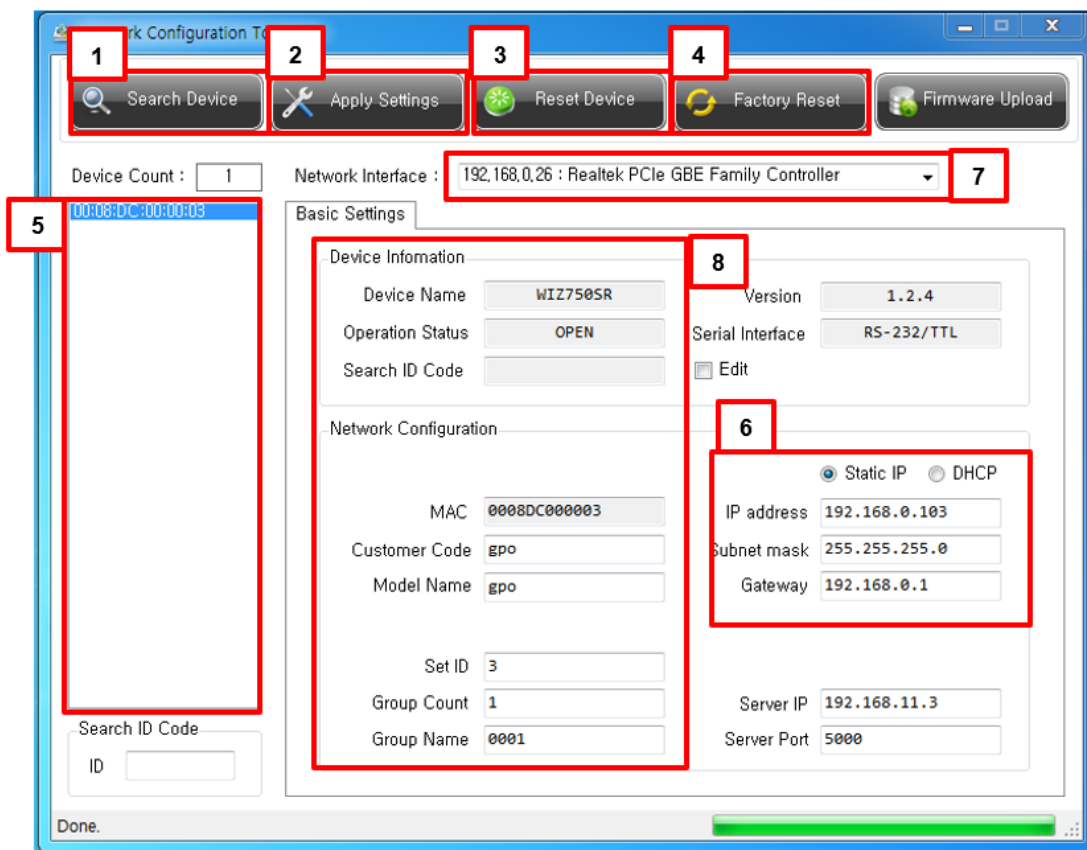

Step 3. Click "Next"

Step 4. Once installation is complete, click "Close" to exit.

Network Config Tools, cont.

2. Running NetworkConfigTool and Structure

Open Networkconfigtool application and you will see the window below:

1. Search Device: Search for connected Network devices button.
      (Search after about 10 seconds when the product is turned on or the setting has been changed)

2. Apply Settings: Save device setting.

3. Reset Device: Network Device Restart button.

4. Factory Reset: Network Device setting initialization.
 * The setting is initialized. Please be careful.

5. Device Count: List of discovered devices.

6. IP Setting: Select DHCP or Static IP, Can be set when Static IP

7. Network Interface: Network Device can only be used in the local network.
         If not, check if the network interface, as it will be different.

8. Device Information & Network Configuration: Do not use as an extension

9. Open SICP and select TCP/IP control. Test control to verify it is functioning correctly.

10. Disconnect control PC and commence network control via 3rd party control system, if desired.
IMPORTANT: If display is replaced or rearranged in array configuration, user must setup NetworkConfigTool again.