Operation Manual
for
Function Board
for NM33 Series (N/F Lens)

Rev. 1.0 2008/12/3

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1. OVERVIEW

This manual describes details of the Function Board that is prepared for the operation and investigation of the omnidirectional camera unit; NM33-N/F.

2. PREMISES

◆ Premises

- This manual and the Function Board are prepared only for engineers who have the general electrical knowledge to design or investigate the light electrical appliance.
- This manual and the Function Board are prepared only for testing and investigating the camera and not for sale as a commercial product. The description and the performance of the function are verified, however the reliance on the accuracy is not guaranteed whatsoever in certain environment.
- OPT Corporation will not be liable for any damages including indirect or consequential from the use of this manual and the Function Board.
- The Function Board is only compatible with the unit described in the section 1 above.
- If there are discrepancies in the description between this manual and the product specification come with the unit, the description of the product specification will take precedence.
- The Function Board is not validated the safety standard in each country.

◆ General caution

- The Function Board is prepared with uncovered, and parts or soldered surface is exposed. Make sure to avoid short circuit or static electricity with the unit. Isolate the unit as may be necessary.
- Provide measures for static electricity to handle with the unit.

3. CONTEXTURE

The Function Board kit consists of the following parts:

(1) Function Board

(2) AC adapter

(3) Video cable

(4) USB cable

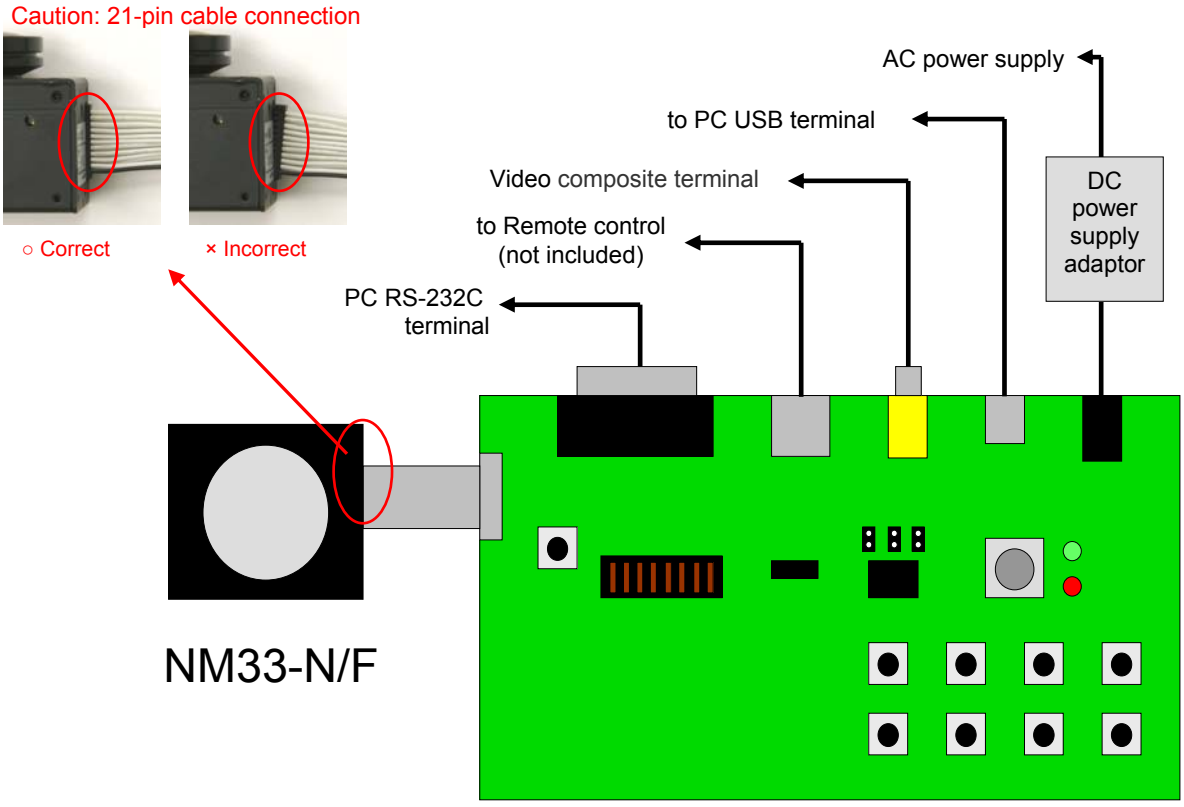
(5) CD with USB driver and application software (Forest-O)

Note: These contents may be changed as needed.

Important Notice: The USB driver and the application software, Forest-O are prepared only for the evaluation. Any installation or bundling of these to any products need to get allowance of OPT Corporation in advance.

4. CONNECTION

A basic connection of the Function Board:



Important Precaution for the connection :

- Before connecting each cable to the Function Board, make sure to disconnect the AC adapter first.
- When disconnect any cable from the Function Board after operation, keep cables connecting for a few seconds after disconnecting the AC adapter for the discharge.
- In order to insert or remove the 21-pin cable to NM33-N/F camera module, make sure in advance to turn the power switch OFF (at midpoint).

  Caution : The camera may become malfunction or damaged if doing to insert or remove the 21-pin cable when applying current.

◆ **Applicants to connect**

- NM33-N/F camera module

  Use the 21-pin cable provided with the camera to connect.
- The AC adapter is adaptive to the range of AC100~240V, 50/60Hz.
- Using a different type of the power supply

  Follow the specification of NM33-N/F to use any different type of the power supply.
- TV monitor

  Connect with a TV monitor with an analog composite insert terminal.

  With some TV monitor with the over-scan system in the marketplace, visions around the outer perimeter in the screen may be defected.
- USB (on PC etc.)

  Use a device with USB1.1 host capability. The unit is designed assuming to use with the Windows XP operation system computer. Refer to the specification for details.

  Note : The unit cannot be operated with Windows2000.
- RS-232

  Connect the Function Board by a straight cable to RS-232C terminal on PC.

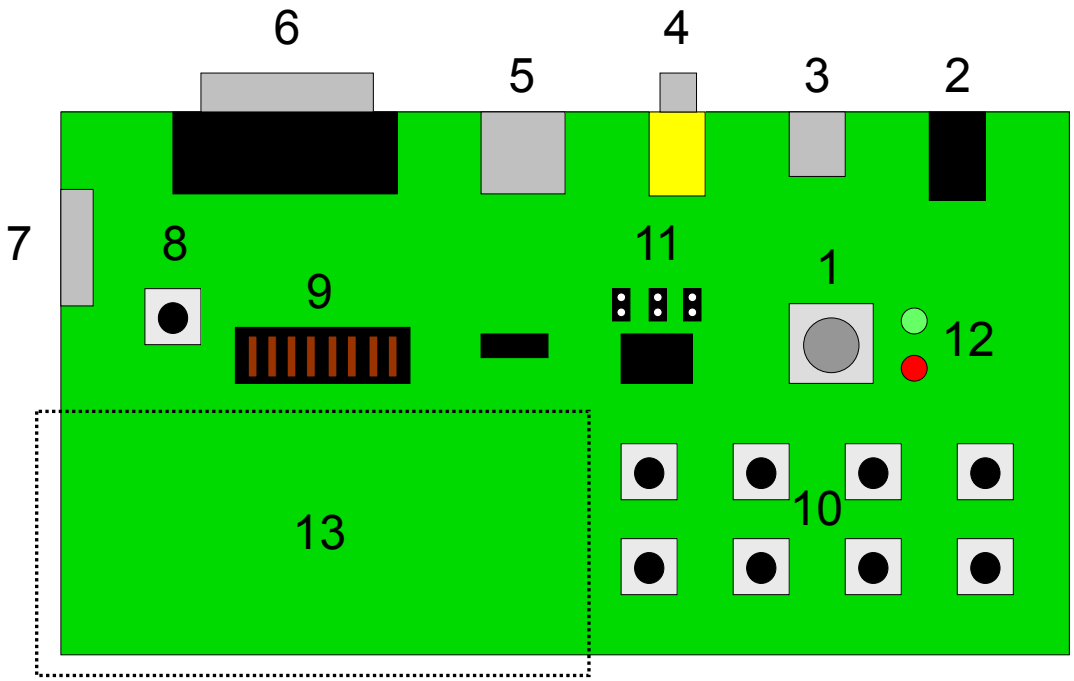
◆ **Using other kinds of cables**

If you use other kinds of cables or harnesses, pay attention to the following issues.

Detail should be referred to the specification for NM-33 N/F.

- Cables with an extra length or width are not recommended for the connection. They could raise malfunction such as the signal attenuation and the waveform influence. Select to use cables under your review.

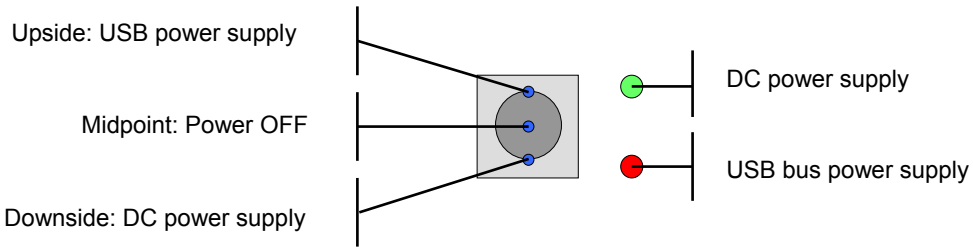
5. PART NAMES, SETTING AND OPERATIONAL INSTRUCTIONS



(1) Power switch

This switch supplies the electricity to the camera module.

As well as turning the power On and OFF by this Switch, a power source can be switched between the USB bus power and the AC adapter. When it is switched to the upside, a power source is supplied from the USB bus power, and the red LED (No.12) turns ON. When it is switched to the downside, a power source is supplied from DC jack (AC adapter), and the green LED (NO.12) turns ON. Power is OFF in the midpoint.

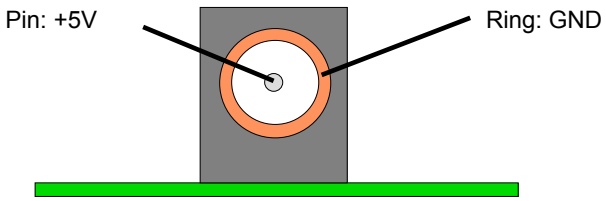


(2) Power Input Jack

This jack is to receive power from the AC adapter. The jack consists of the unified polar character as “+“ for the pin side and “-“ (GND) for the ring side.

The configuration of the power plug of the AC adapter : internal diameter of the plug is 2.1mm and the external diameter is 5.5mm.

By using the bundled AC adapter, DC+5V can be supplied into the power jack on the Function Board. Prepare a well stabilized power supplier, in case to use your own.



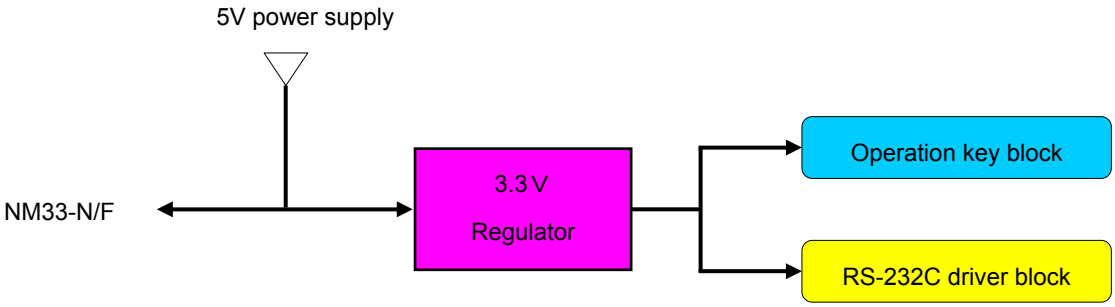
(3) USB Socket

The USB terminal type is mini-B.

Use a USB equipment and a cable compatible to the bus power for supplying the power via USB bus. When you use a hub to connect, set up the power supply to secure 500mA to the Function Board.

Note : The power composition

The Function Board supplies power to the NM33-N/F and at the same moment to the operation key block and the RS-232C driver block of the Function Board. These blocks can be operated by 3.3V power. Therefore, the 3.3V regulator is built in the Function Board.



(4) Analog Composite Output Terminal

This is the RCA-PIN jack to output the analog composite video signal.

The output terminal (No.4) leads out the composite video signal.

NTSC/PAL can be switched on the NM33-N/F setting. (Factory default setting)

(5) Remote Control Connecting Terminal

This is not for ordinary use.

A control board of the equivalent design to the reference circuit diagram shown in 5-1 can be connected to this terminal and used as a remote controller for the camera.

The terminal uses the Mini-Din 6 pin configuration.

(6) RS-232C Terminal

The RS-232C terminal is for the external control. This can be used to control NM33-N/F by connecting to PC like device.

Note : For disclosing the control commands, the NDA contract is needed separately.

(7) NM33-N/F Connector

The connector is to connect NM33-N/F.

The connector uses the 1.25mm FI series of JAE.

(8) Reset Button

This button is for resetting NM33-N/F.

Normally, NM33-N/F resets by itself when the power turns ON. Though, when NM33-N/F needs to be reset manually, use this button to reset.

(9) NM Setting Switch

This switch is no need for current use. It is built only for future extends.

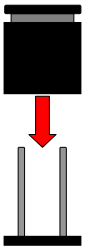
(10) Control Keys

These key switches are to operate the output image of NM33-N/F.

Enter the jumper pin by following the instruction to use these keys.

(11) Jumper to Switch Keys (short pin)

According to the setting of the short pin, the operation with the keys (No.10) on the Function Board or the remote controller exteriorly connected to the No.5 Remote Control Connecting Terminal is selected. Plug all 3 short pins when operating with the keys (No.10) on the Function Board. The 2.54mm pitch jumper for PC accessories in the market can also be used.



(12) Power Switch LED Lights

These LED lights show the power supply sources. (Refer to the above No. 1 explanation)

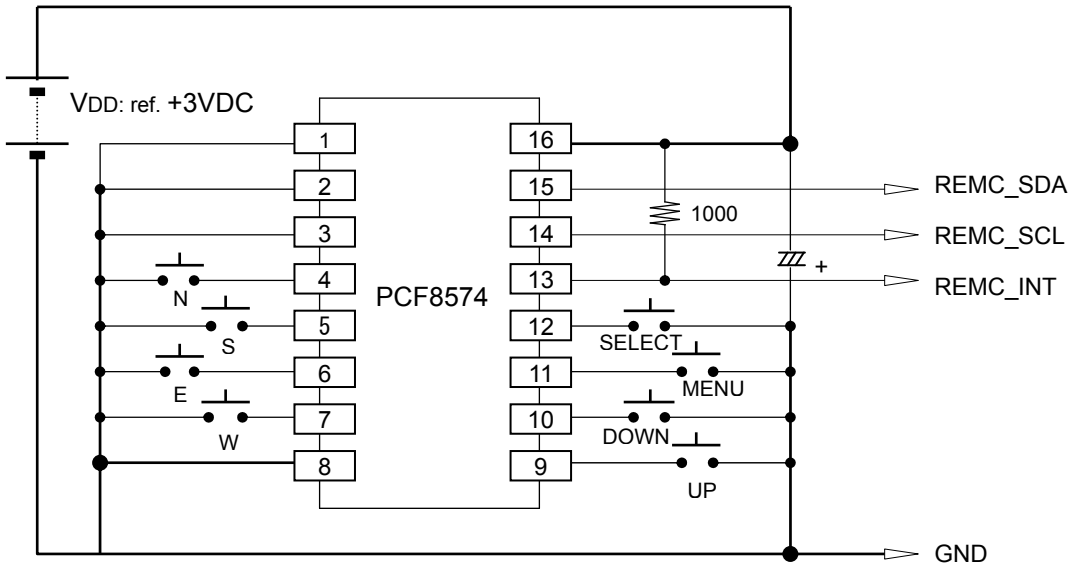
(13) This area is prepared just for the design, manufacture, and maintenance purpose. It will not be used for regular use, so that no parts are implemented in this area on the standard Function Board.

5-1. REMOTE CONTROL CIRCUIT DIAGRAM FOR REFERENCE

Note : The exterior remote control board is not bundled for the Function Board.

Note : The below diagram is a reference for the remote control board.

Note : No guarantee is given for the operation and performance.



Note : PCF8574A is produced by Philips Electronics.

Be aware of the difference between PCF8574 and PCF8574A.

Use PCF8574A for this circuit diagram.

5-2. KEY OPERATION

This is the description for each key for the operation.

Function		SW Name	Description	Applied display mode
Image display mode switch over		MENU	Switch over within Panorama Mode	All
		SELECT	Switch over within Wide Mode	
Display positioning (Wide)	Right shift	E	Shift the mapping image to the right (Displayed contents shift right to left)	Other than "Hemisphere" mode
	Left shift	W	Shift the mapping image to the left (Displayed contents shift left to right)	
	Upward shift	N	Shift the mapping image to the upward	
	Downward shift	S	Shift the mapping image to the downward	
Display positioning (Panorama)	Counterclockwise rotation	E	Turn the mapping image counterclockwise. (*1)	Other than "Hemisphere" mode
	Clockwise rotation	W	Turn the mapping image clockwise. (*1)	
	Centrally-direct	N	Shift the mapping image to the centrally direct.(*1)	
	Periphery-direct	S	Shift the mapping image to the periphery direct.(*1)	
Zoom adjustment	Zoom-in	UP	Zoom In: Enlarge the image	Other than "Hemisphere" mode
	Zoom-out	DOWN	Zoom Out: Zoom out the image	
Display contents saving		SELECT + UP (*2)	Save current display mode and the display position	All

Note *1 : Shifting direction reverses as well in the inversion modes.

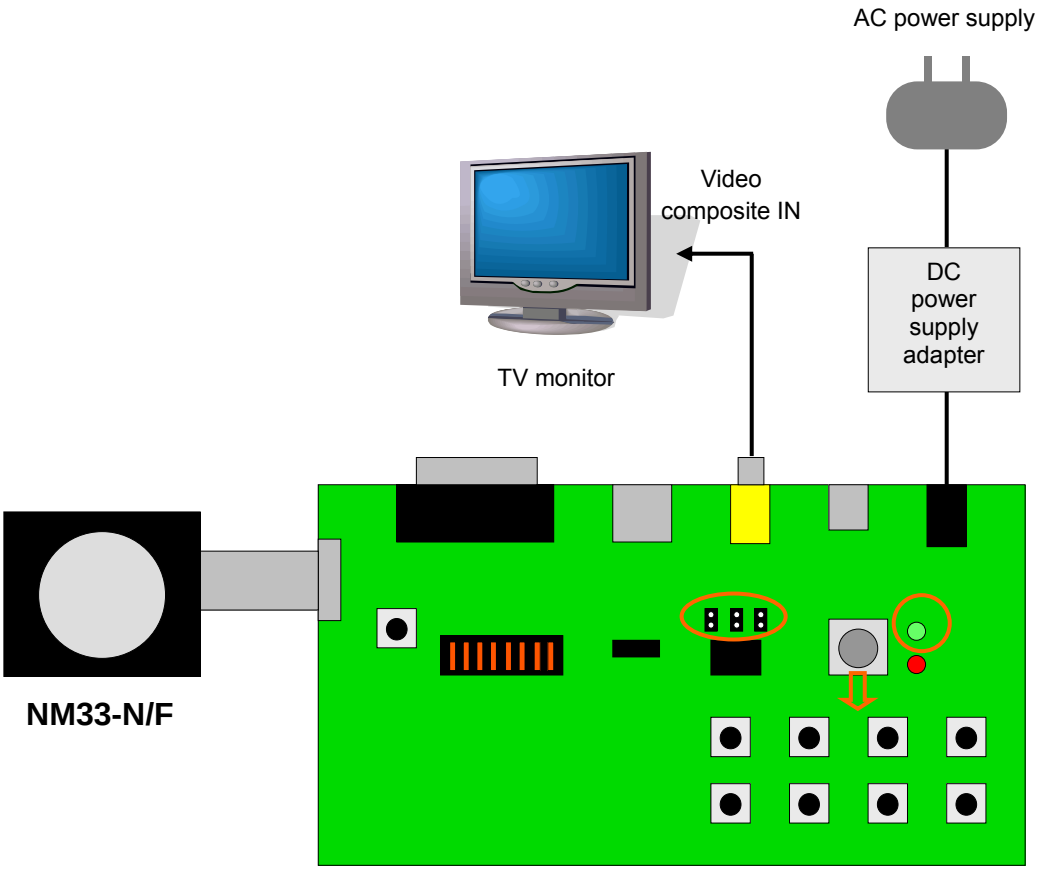
Note *2 : Press "SELECT" and also "UP" at the same time.

Note : SW codes described in the above (N, S, E, W, UP, DOWN, MENU, SEL) are compliant with the symbols printed on the Control Keys.

6. EXAMPLES FOR THE CONNECTION

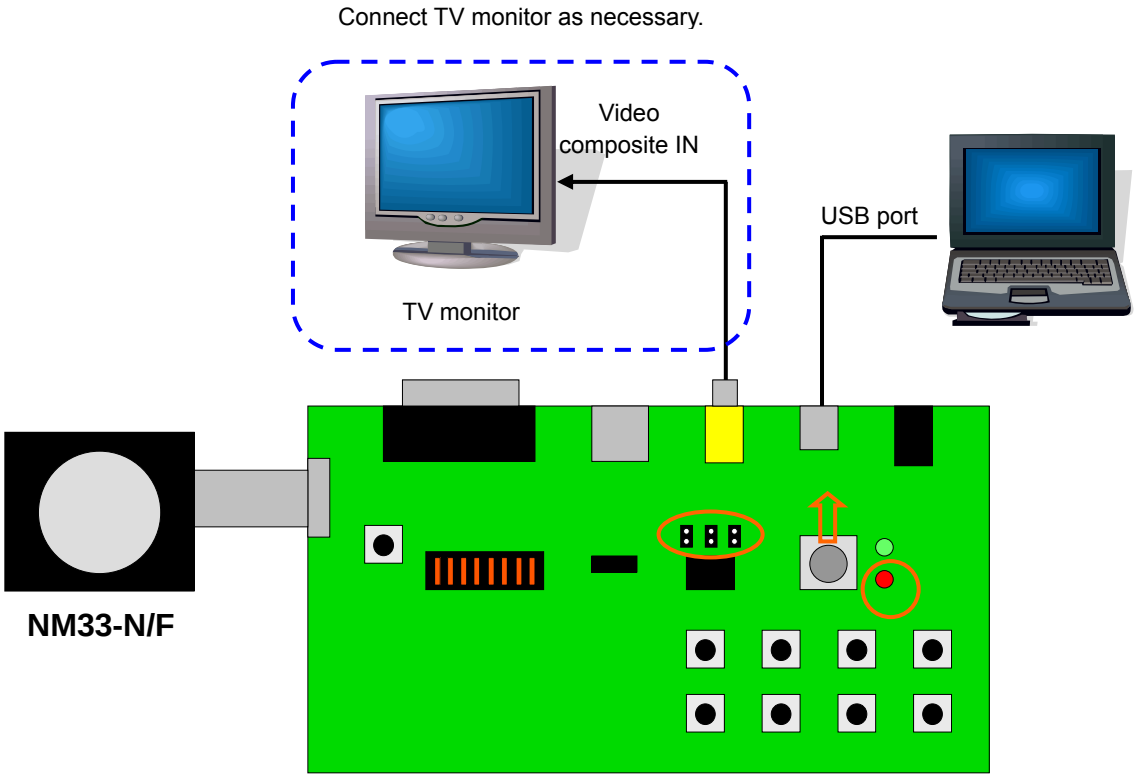
The following is an example of basic connection for NM33-N/F using the Function Board.

6-1. STAND-ALONE OPERATION



Jumper pin 1-3	Power switch	LED
Connected	Downside	Green

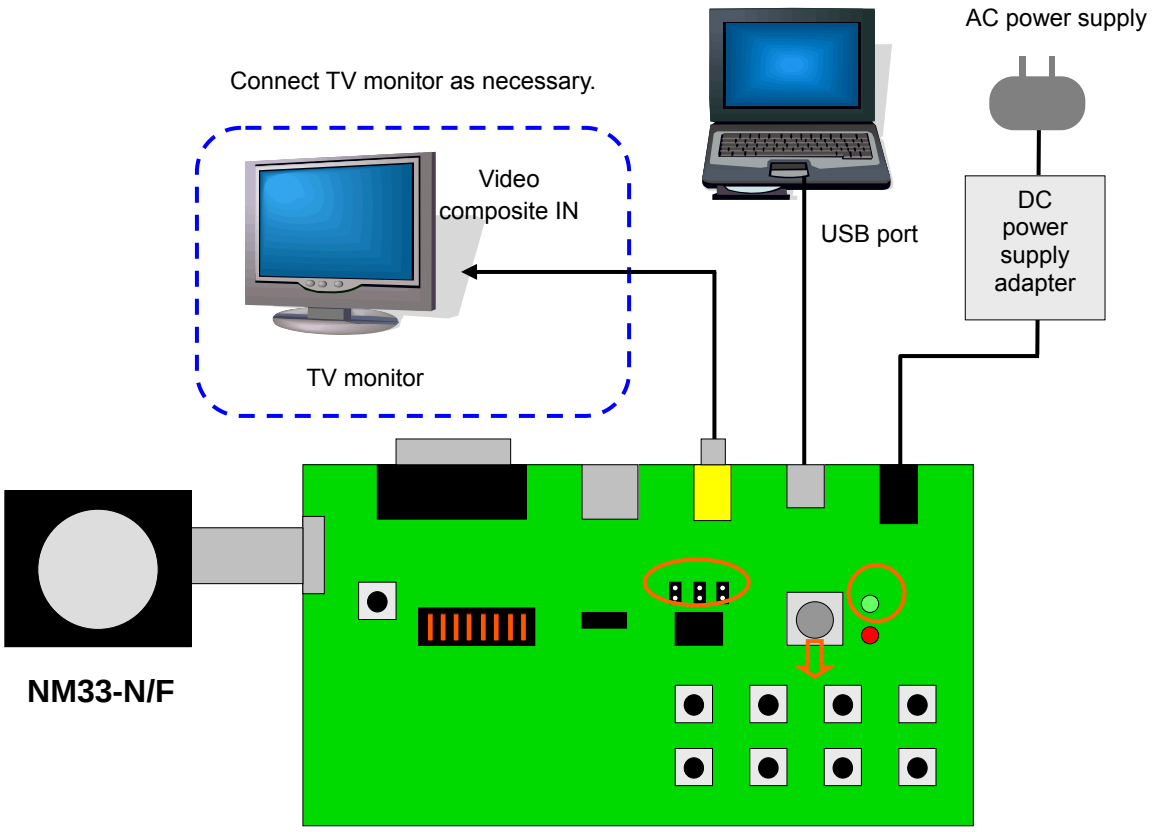
6-2. USB OPERATION (USB BUS POWER SUPPLY)



Jumper pin 1-3	Power switch	LED
Connected	Upside	Red

6-3. USB OPERATION (EXTERNAL POWER SUPPLY)

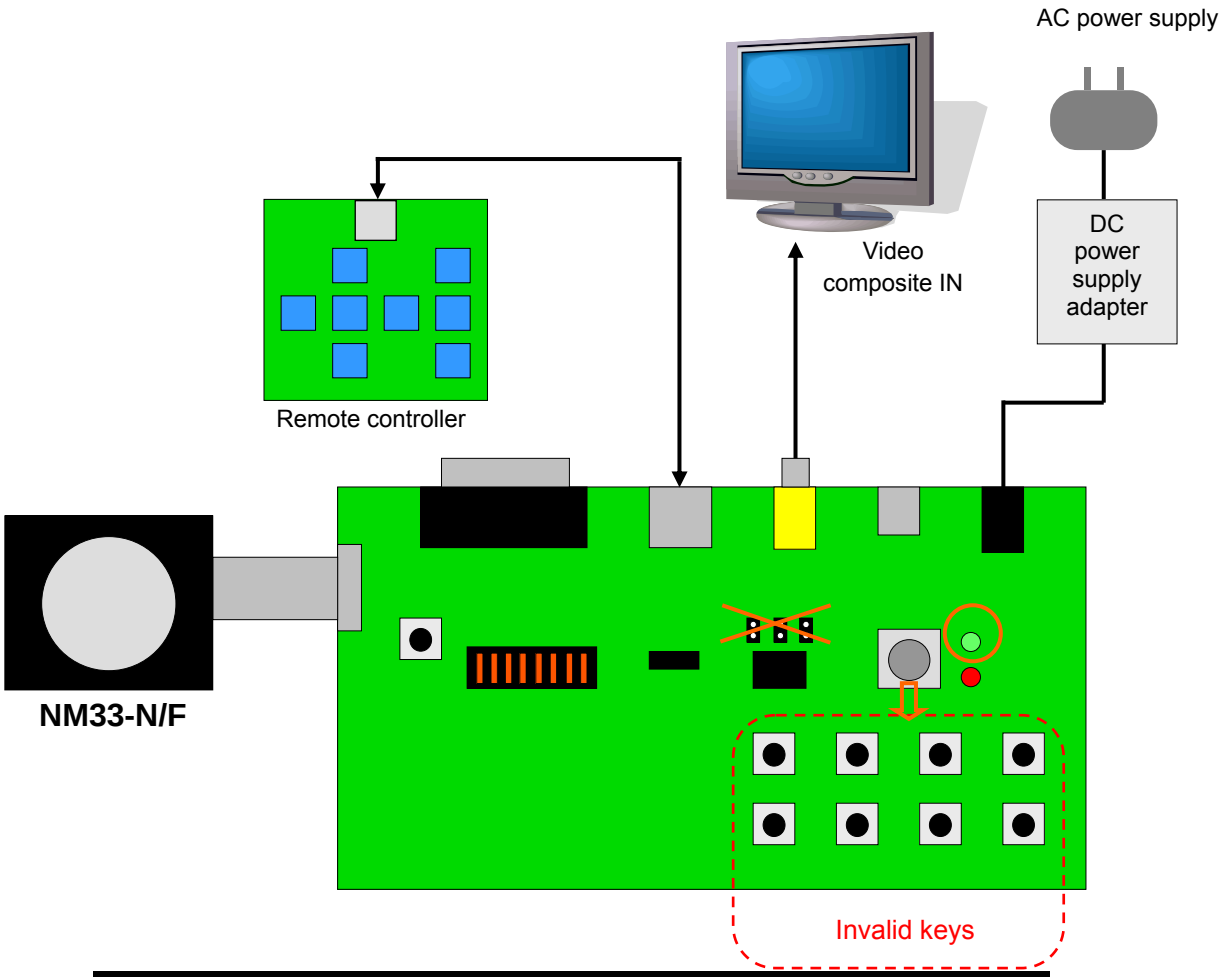
This is an example for the USB connection without supplying power from the USB bus but externally. Select this connection when the power from the USB bus power is not enough.



Jumper pin 1-3	Power switch	LED
Connected	Downside	Green

6-4. CONNECTING AN EXTERNAL REMOTE CONTROL

This is an example for the connection to invalid the operation by the Control Keys on the Function Board and to operate by the connected remote controller. (The remote controller is not bundled with the Function Board kit.)

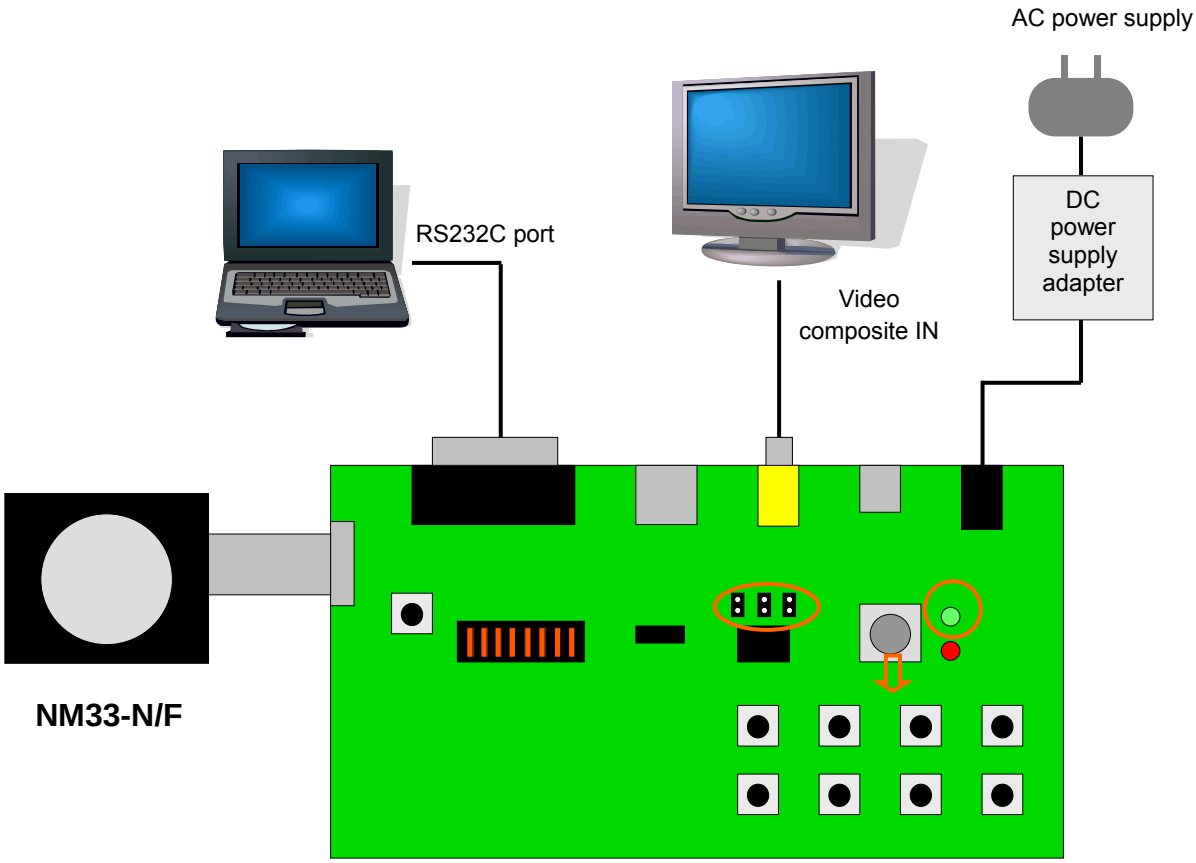


Jumper pin 1-3	Power switch	LED
Disconnected	Downside	Green

6-5. TO OPERATE BY RS-232C

This is an example for the connection to operate through RS-232C by a PC.

Note : Refer to the (6) in the section 5. PART NAMES, SETTING AND OPERATIONAL INSTRUCTIONS.



Jumper pin 1-3	Power switch	LED
Connected	Downside	Green

Note : Use a straight cable to connect RS-232C.