

# Train Car Monitoring System



Rev.2

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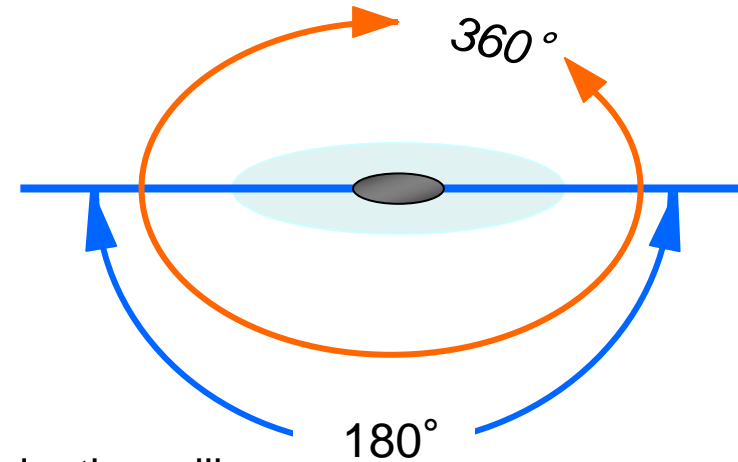
P. 1

# General

- For the prevention of crimes or molesters, and the ease and safety in the train car, we are glad to introduce the best surveillance camera.
- Our camera has the proven track record of more than 9,800 units installed to more than 2,900 train cars in China in these 5 years. These have played active roles as the surveillance camera in the trains accessed to the main sites of the Beijing Olympic Games and the Shanghai Expo.
- JR Kyushu has adopted our camera on the super express cruising train “Nanatsuboshi (Seven Stars)”.
- Because of its omnidirectional view, not like conventional surveillance cameras, without any blind spot, the number of cameras can be reduced and the system can be simpler.

## Key features of the camera

- 3 Mega pixel color CMOS sensor
- **360° omnidirectional view**
- Ultra wide view angle of 180° allows to see all under the ceiling.
- Built-in high-speed processor converts a hemispherical image from the fish-eye lens to a flat image and can zoom or scroll any portion of the images.
- Because of its small body, it can fit into a narrow space behind the ceiling of the train car. The volume of projection part under the ceiling is a little and the sight is not spoiled.
- Small and lightweight. No moving parts provides a better durability.
- Because of its omnidirectional view, it has no blind spot, and the number of cameras can be reduced. In parallel, the time, cost and effort for the wiring can be reduced as well as the labor for monitoring.



## Style of the camera



Cubic type: NM33-F



Example of housing 1



Example of housing 2

## Example of installation in Shanghai Sub-way car

◎ Small body can fit behind the ceiling.

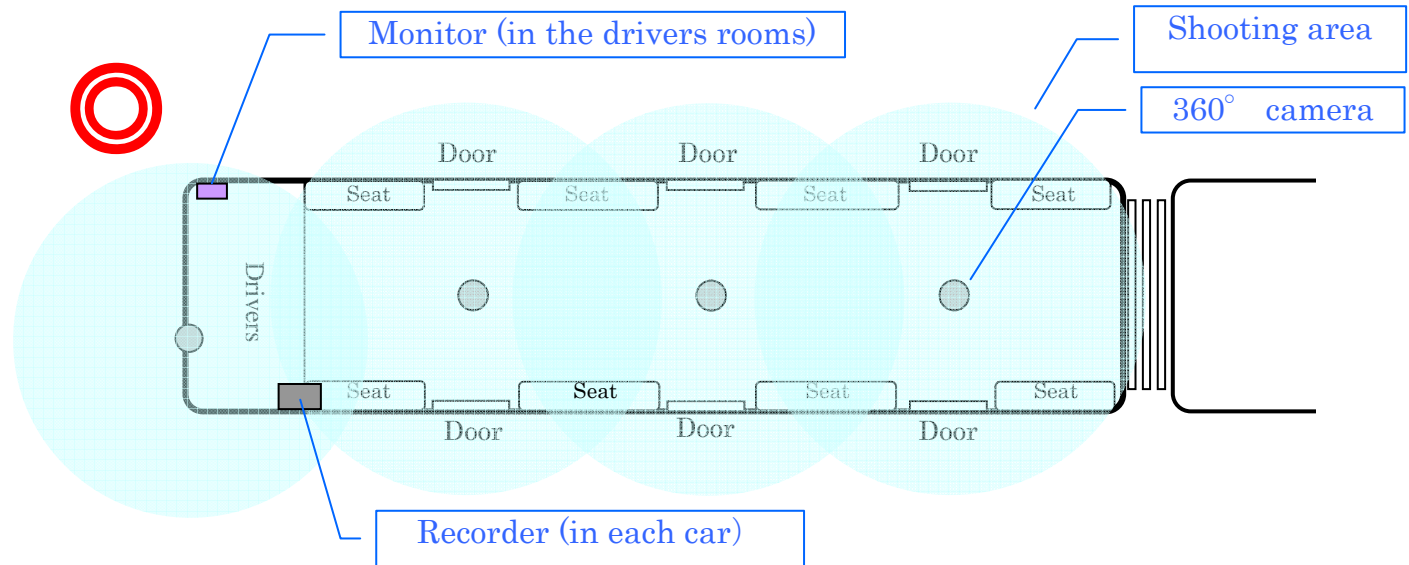


◎ No projection under the ceiling does not spoil the sight.

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# Example of usage in the Shanghai sub-way cars

3 cameras in a car × 8 cars / train + front & rear drivers room = 26 cameras / train

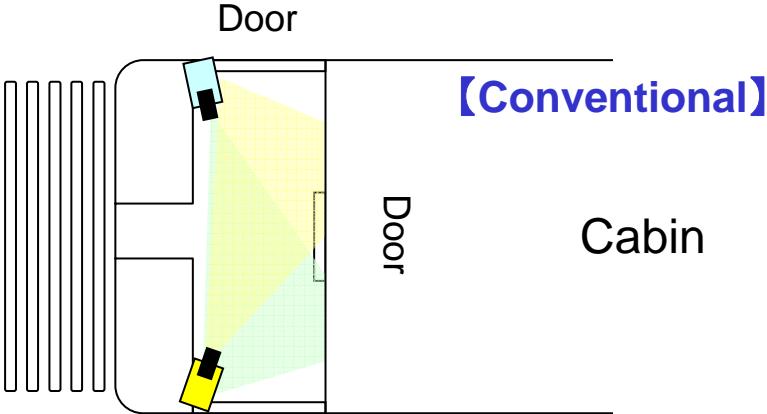


**X** More number of conventional cameras are necessary to cover the blind spot of each others.

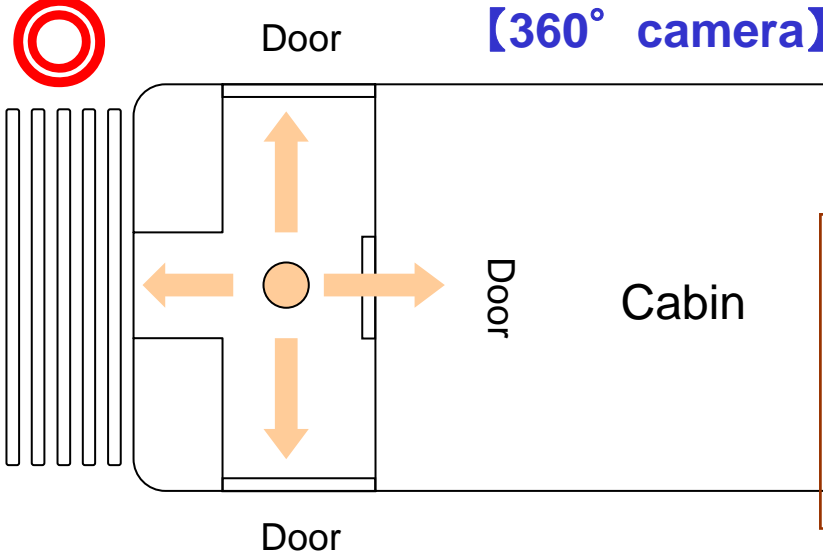
**◇ Overhead rack is in the view area.**  
Note: Need to check the affection of hanging displays.

# Proposal to use at the entrance of train

- ◆ Simplify the system
- ◆ Better usage



Face up the one-directional cameras to monitor each door.



With only one camera, not only both doors but also the entrance way becomes in view.



# Sample Images (installing under the ceiling downwards)



Dewarped into two 180° panoramic images



Hemispherical all around image from fish-eye lens



Dewarped into four 90° images



**Easy to Pan, Tilt and Zoom in a designated area** Note2  
**Possible to P/T/Z without moving mechanically.**

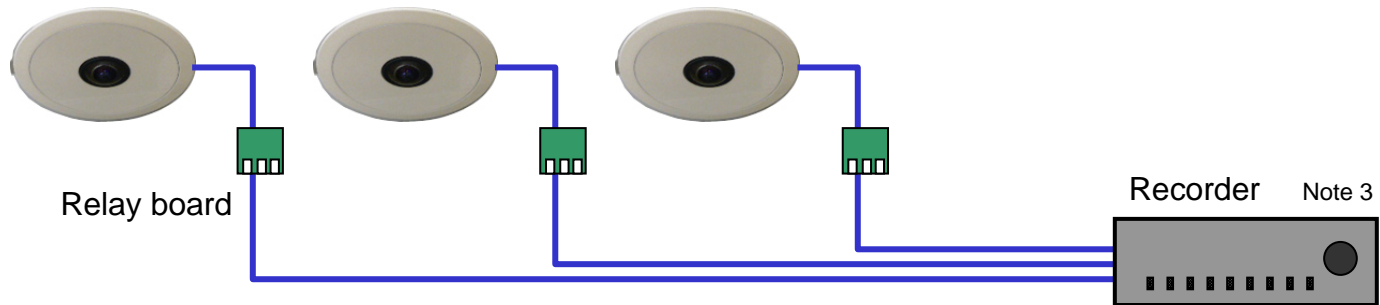
Note 2: Remote Controller is required for the analog use.

# Specification of the camera Model : NM33-F

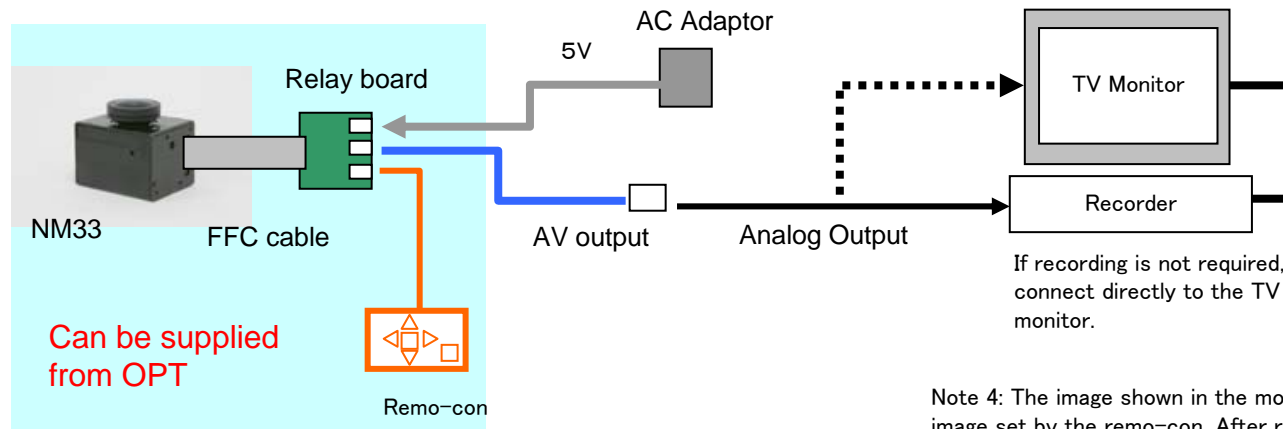
Item	Value	Condition
<b>Power</b> Supply Voltage Consumption Current	5.0 V ± 5 % 500 mA (Max. Vcc)	Reference value of the current when the operational voltage is maximum.
<b>Lens</b> Object Distance Viewing Angle	10 mm ~ infinity (from the lens surface) 180°(V), 360°(H)	
<b>Image Sensor</b> Effective Pixels Usable Pixels	H: 2048 x V: 1536 approx. 3.15 Mega pixels Approx. 2.7 Mega pixels	½ inch single color CMOS image sensor.
<b>Minimum Light Required</b>	5 lux	When AGC is off
<b>Video Output (analog)</b> Video Signal System Output Drive Capability Image Signal	(VBS mode) COMPOSITE VIDEO 1Vp-p, negative sync. 75 Ω NTSC/PAL	Set ex-factory
<b>Video Output (digital)</b> Interface Image Compression type Image dimension	(USB FS mode) USB1.1 (full speed) JPEG VGA:640x480, QVGA:320x240	Movie Frame Rate: 15 fps max.  Possible to switch by control signal
<b>Dimensions</b> size weight	W39×H30×D28 mm (excluding lens) 60 ± 5 g	Design value
<b>Operation Environment</b>	Temperature: 0 ~ 40 °C Humidity: 20 ~ 80 %(Rh)	Non-condensation Need to keep the environment within the specified value.
<b>Storage Environment</b>	Temperature: -20 ~ +6 °C Humidity: 5 ~ 95 %(Rh)	Non-condensation



# Outline of the recording



## Standard configuration of the system



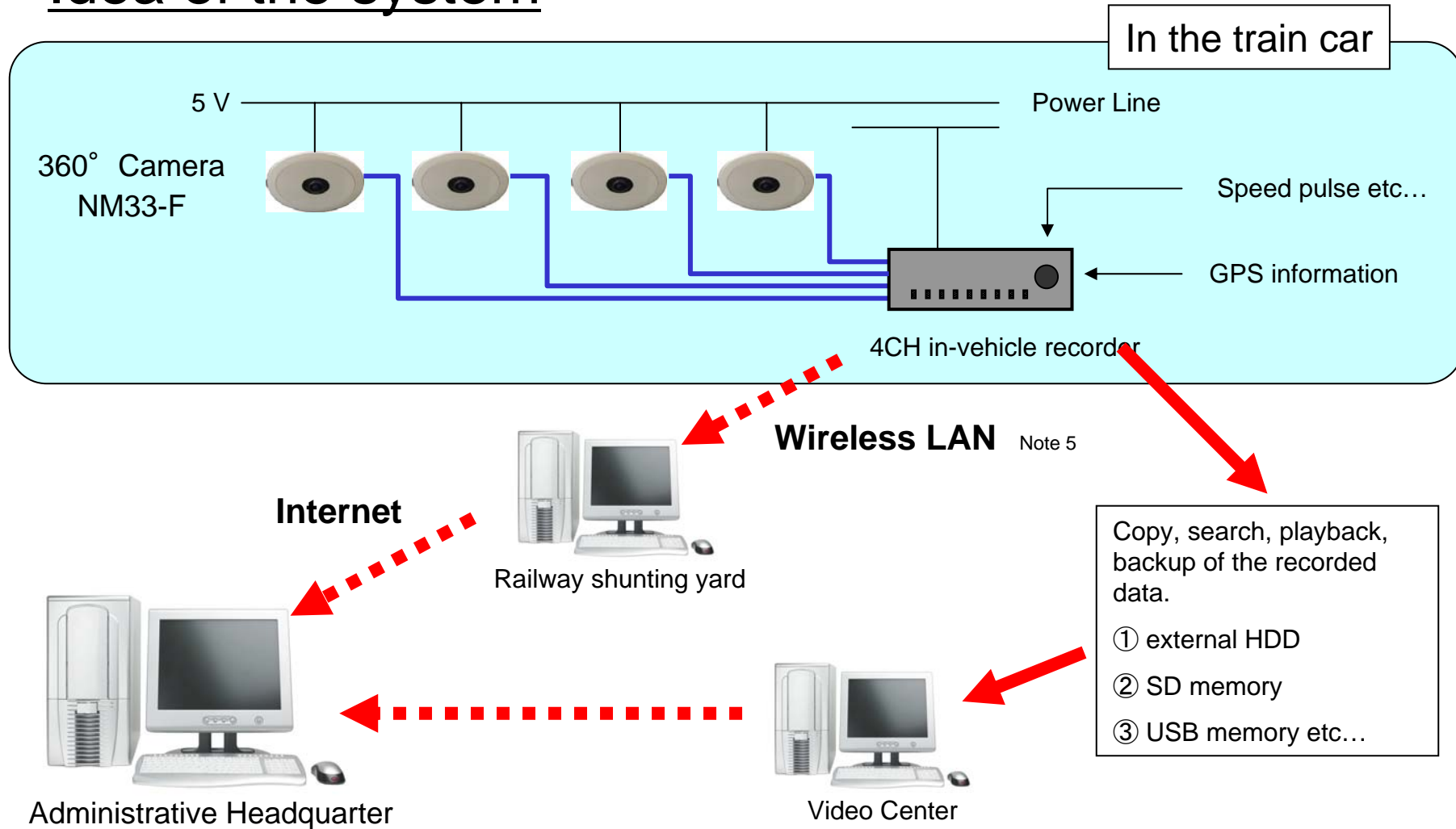
Can be supplied from OPT

Remo-con is required when installing the camera.

Note 4: The image shown in the monitor is the image set by the remo-con. After recorded, no P/T/Z operation is allowed.

Note 3: Recorder must be researched separately.

# Idea of the system



注5: 無線LAN、LAN、WANなどの構築は別途検討が必要です。

## Summary

- Please use 360° camera, NM33-F for the monitoring in the train car with the followings advantages
  - ◎ best performance
  - ◎ better usage
  - ◎ good tracking record

**Thank you!**

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