# Wiring cautions for face recognition devices

In the construction, the weak current cable laying and power supply problems are often involved. The face recognition device often needs to be used with the access control system and uses network digital technology for transmission, which may lead to the fact that the power supply is shared with the access control system during the actual wiring, and the network cable is used to supply 12V power over a long distance. This causes insufficient low voltage power supply and makes equipment does not work properly or even damages the device.

1. Common errors

1.1 Share the power supply with the access control system, or directly connect the face to the access control power supply, resulting in insufficient power supply, the device cannot be started, working abnormally, or even get damaged!

Some access control power supply products on the market adopt 12V DC working mode, and the voltage of 12V is exactly the working voltage of our company's face recognition devices, which leads to the direct connection of the face recognition device to the access control power supply in some wiring , this is wrong, which will cause the device to fail to start, work abnormally, or even damage the device.
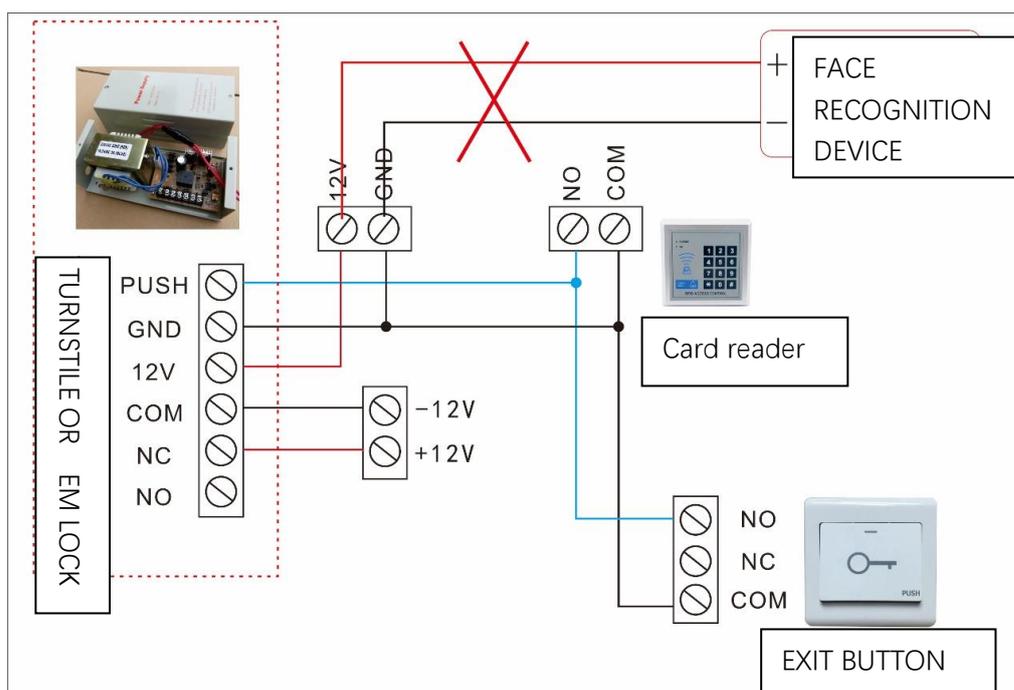
2. Operational errors

2.1. The default adapter of the device is 12VDC/2A. One end of the adapter is 220V AC and the other end is 12V DC. It is forbidden to artificially extend the 12V DC end during construction. Due to factors such as wire material difference and distance difference, the actual load voltage drop on the device end will be caused. Obviously, the face recognition device cannot be powered normally and work abnormally or even damaged. (Figure 1)
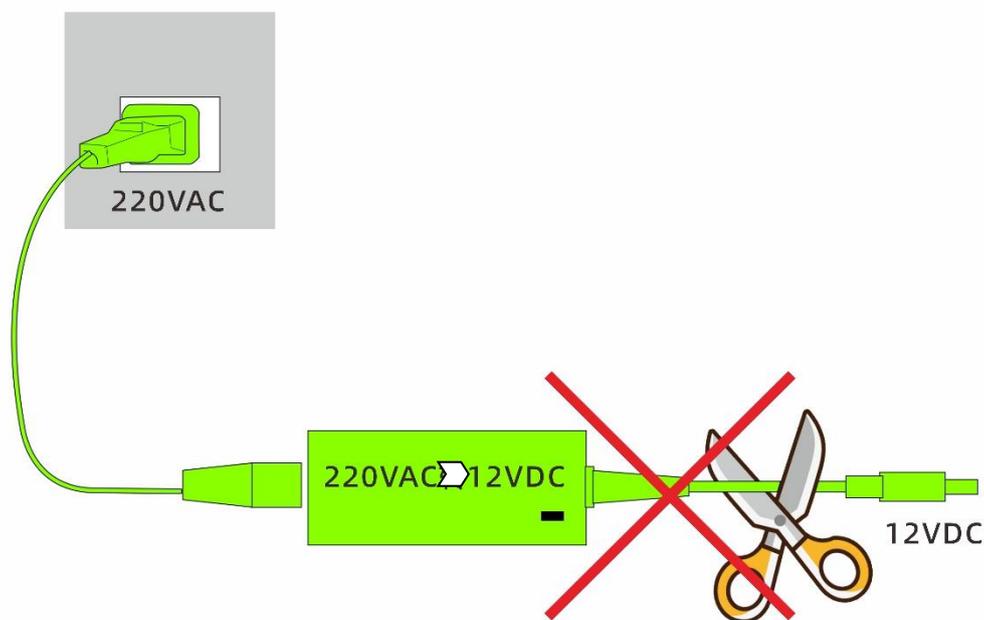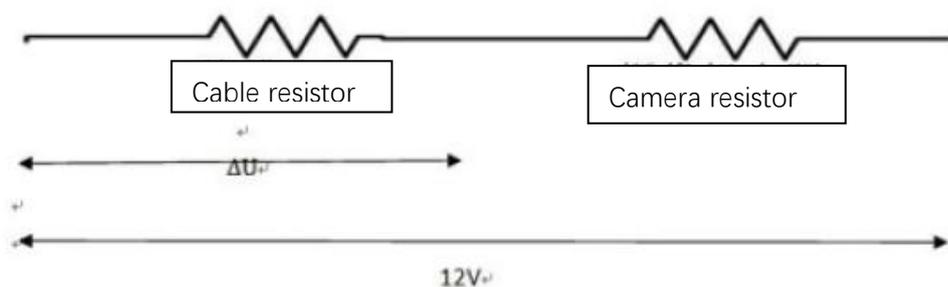

Figure 1

As shown in the figure above, artificially extending the 12VDC terminal is an irregular operation, which will cause the face recognition device to work abnormally or even get damaged.

2.2. The same network twisted-pair cable transmits network data and DC12V power supply at the same time, which will cause the equipment to fail to start, abnormal operation, or even damage!

Since the face recognition device adopts digital transmission of information on the network, the network twisted pair (TP) is a common transmission cable in laying cables and the installation of face recognition devices , which may lead to a part of the twisted pair is used to transmit 12V power.

The diameter of the common copper cable is too thin (usually 0.5mm). Due to the resistance of the cable itself, the 12V voltage of the face recognition device cannot be transmitted over long distances in such a medium. , if the power supply with this type of cable will cause the face recognition device and the cable itself to form two loads in series (Figure 2), which will cause the product adapter to be overloaded and the face recognition device will not work properly.

Figure 2

1.   Cable resistance formula: R=p*l/s (p—resistivity; l—resistance length; s—resistance perpendicular to the current or cable cross-sectional area). The resistance of the cable is related to its length (represented by L, unit: meter), cross-sectional area (represented by S, unit: square meter) and temperature, etc. Theoretically, the resistance of a uniform metal substance (R expressed, unit: ohm) is: $R = \rho L/S$

According to the above calculation formula, we can see that the resistance value of the resistor or cable has a negative correlation with the cross-sectional area "S", that is, the smaller the cross-sectional area of the wire, the greater the resistance of the cable, and a positive correlation with length of the cable" L" , the larger "L" is, the greater the resistance or cable resistance is. Therefore, the ideal state of the low-voltage DC power supply cable should be as large as possible, and the cable should be as short as possible. (The resistivity "p" of copper at 20° C is 1.7X10−8 ohms) Too small wire diameter and too long power supply distance will cause the cable itself to have too much resistance, which will cause the face

recognition device and the cable to form a situation of double loads in series. The following figure (Figure 3) shows the wrong connection of the network twisted pair power supply.
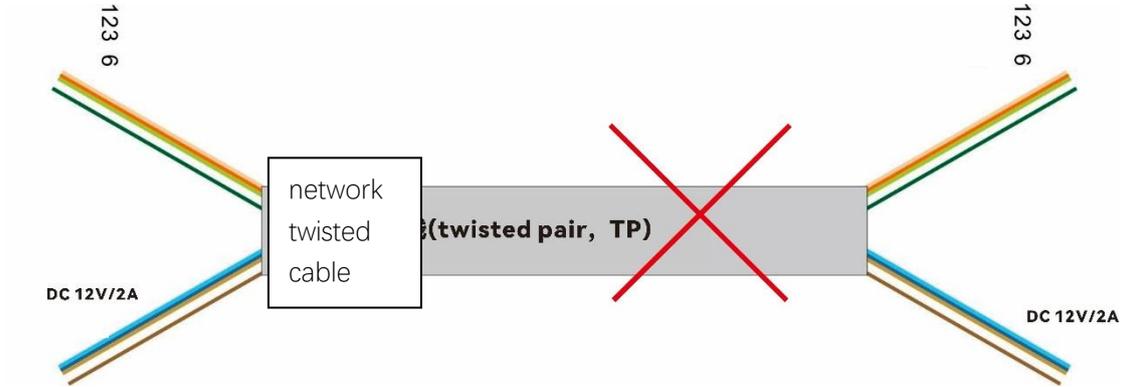

Figure 3