

Biggest Greenhouse in Asia



Location	Shanghai, China
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Lighting Control	Lite Puter Team
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System and Lamps	Ningbo Sun Light & Power Technology Co., Ltd (SUC)
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Introduction

After more than three years of construction, Chenshan Botanical Garden in Shanghai was finally opened on January 23, 2011. The garden consists of four major areas, including Central Display Area, Native Plants Conservation Area, Five Continent Plants Zones, and External Buffer Constitute, covering an area of 207 square meters. The garden is not only a tourist site; moreover, it is a place to educate the public on environmental protection and ecological balance.

Applications of Lighting Control Systems

There are three individual greenhouses with a total area of about 21,000 m². Each greenhouse uses an independent lighting control system to emphasize its distinct flora and environment. The garden is especially breathtaking at night with the spectacular scenic views of the entire garden being decorated by LEDs for landscape lighting.

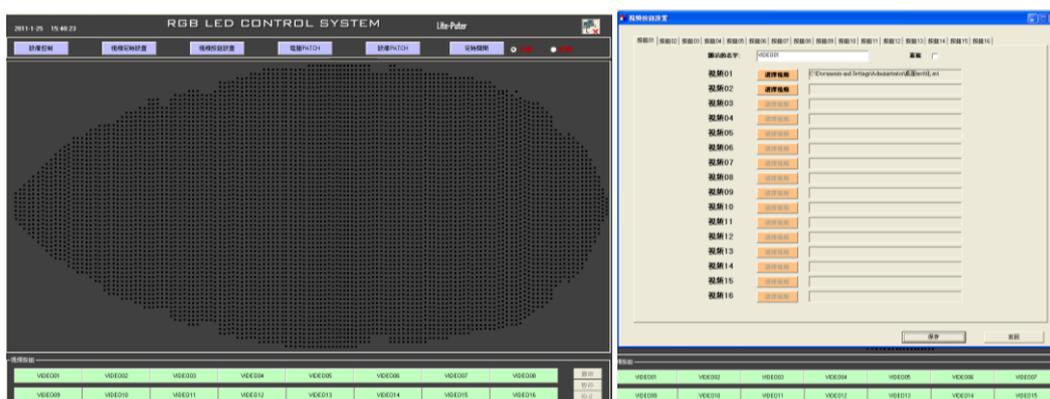


LED Lighting Control System

Hardware

All LED strips are supplied by SUC. The built-in LED drivers of the strips are Lite Puter's 3-channel LED dimmable drivers, which are controlled by DMX-512. The external DMX isolators are also applied to enhance the stability of the signal in the entire control system.

The core of the control systems is DP-E4000, an 8 DMX-512 universe controller, controlling up to 4096 channels. As mentioned before, the greenhouse is divided into three parts, A, B and C. There are 6807 RGB LED lamps (20421 channels) in Greenhouse A, which are controlled by five DP-E4000's. 4932 RGB LED lamps (14796 channels) are used in Greenhouse B and controlled by four DP-E4000's. Greenhouse C uses 2751 lamps (8253 channels), which are controlled by three DP-4000. With DP-E4000 and the central control software, the lighting of each greenhouse can function independently or simultaneously.



Software

In this project, RGB PRO was used as the control software. RGB PRO software can control 32,768 channels, and 256 event schedulers are applicable. It also supports the importing of AVI and RMVB file to display as a RGB matrix. There can be up to 32 video groups, with each group up to 16 videos playing repeatedly.

Reliability

In greenhouses, the high temperature, humidity, and acidic environment are combined a challenge for the lighting control systems and LED lamps. Being water-proof and having signal reliability are the two key factors in the system.

DMX-512 signal is up to 200m. DMX-512 features long transmission range (up to 200m) and proven high stability, making it the best choice for controlling large-scaled systems, such as the Chenshan Shanghai Botanical Garden. By utilizing isolators in the sub-areas, even when several lamps malfunction, the whole system still works. Lite Puter offers professional LED dimmable drivers, as well as scalable and extendable central controllers in the application and designing of the garden, making it the most versatile botanical garden in the world.



Equipments

Item	Description	Q'ty	Brand
LEDs	LED strips	14490	SUC
LED Driver	3CH DMX LED driver	14490	Lite-Puter
ISO-2	DMX isolator	500	Lite-Puter
DP-E4000	4096CH Ethernet Interface	12	Lite-Puter
RGB PRO	RGB software	3	Lite-Puter

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