



Asia's Biggest Greenhouse

The Application of Lite-Puter LED Control Systems at Chen Shan Shanghai Botanical Garden

Location	Shanghai , China
Lighting control system and lamps	Lite-Puter Ningbo Sun Light & Power Technology Co., Ltd (SUC in brief)

Introduction

After more than 4 years of construction, Shanghai Chen Shan Botanical Garden was opened in the beginning of 2011. There are four major areas included the center display area, native plants conservation area, five continents plants zones, and external buffer constitute, coving an area of 207 square meters. The garden is not only a tourist site to visit but also a place for the education of environmental protection and ecological balance.

Applications of Lighting Control Systems

There are three individual greenhouses in the garden. The total area of the buildings is about 21,000 m². Each greenhouse applies independent lighting control systems to emphasize the distinct flora and environment of each area. To show a spectacular scene in the night, all greenhouses are 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 three channel LED dimmable driver. The drivers can be controlled by DMX-512. The external DMX isolators are also applied to enhance the stability of the signal in the whole control system.

The core of control systems is DP-E4000, an 8 DMX-512 universe controller,

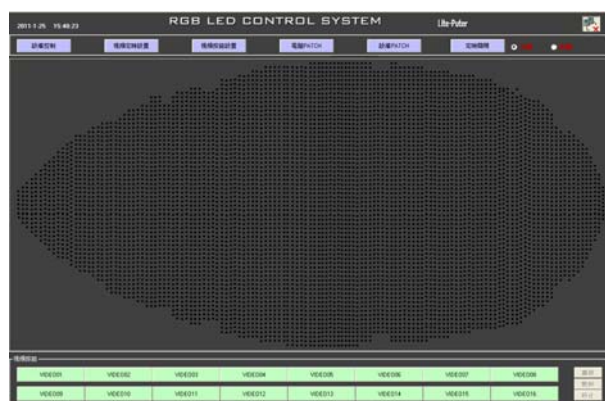
controlling up to 4096 channels. As mentioned before, the greenhouse is divided into three parts, A, B and C. There are 6807 RGB LED lamps (20421 channels) in Greenhouse A and are controlled by 5 DP-E4000. There are 4932 RGB LED lamps (14796 channels) in Greenhouse B and are controlled by 4 DP-E4000 and there are 2751 lamps (8253 channels) in Greenhouse C and are controlled by 3 DP-4000. By DP-E4000 and the central control software, the lighting of each greenhouse can be work independently or synchronously.

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

Software

In this project, we use RGB PRO as the control software. RGB PRO software can control 32,768 channels. 256 event schedulers are applicable. It also support importing AVI and RMVB file to display as a RGB matrix. Up to 32 video groups, each group includes up to 16 videos to play repeatedly.



Reliability for Whole System

In the greenhouse, the high temperature, humidity and acidic environment is a challenge for the lighting control systems and LED lamps. Water-proof and signal reliability are two main 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 the large-scale system such as Chen Shan Shanghai Botanical Garden. By utilizing isolators in the sub-areas, even several lamps are malfunctioned, the whole system still works. Lite-Puter offers professional LED dimmable driver as well as scalable and extendable central controller in the application of the garden, making it the most versatile botanical garden all over the world.