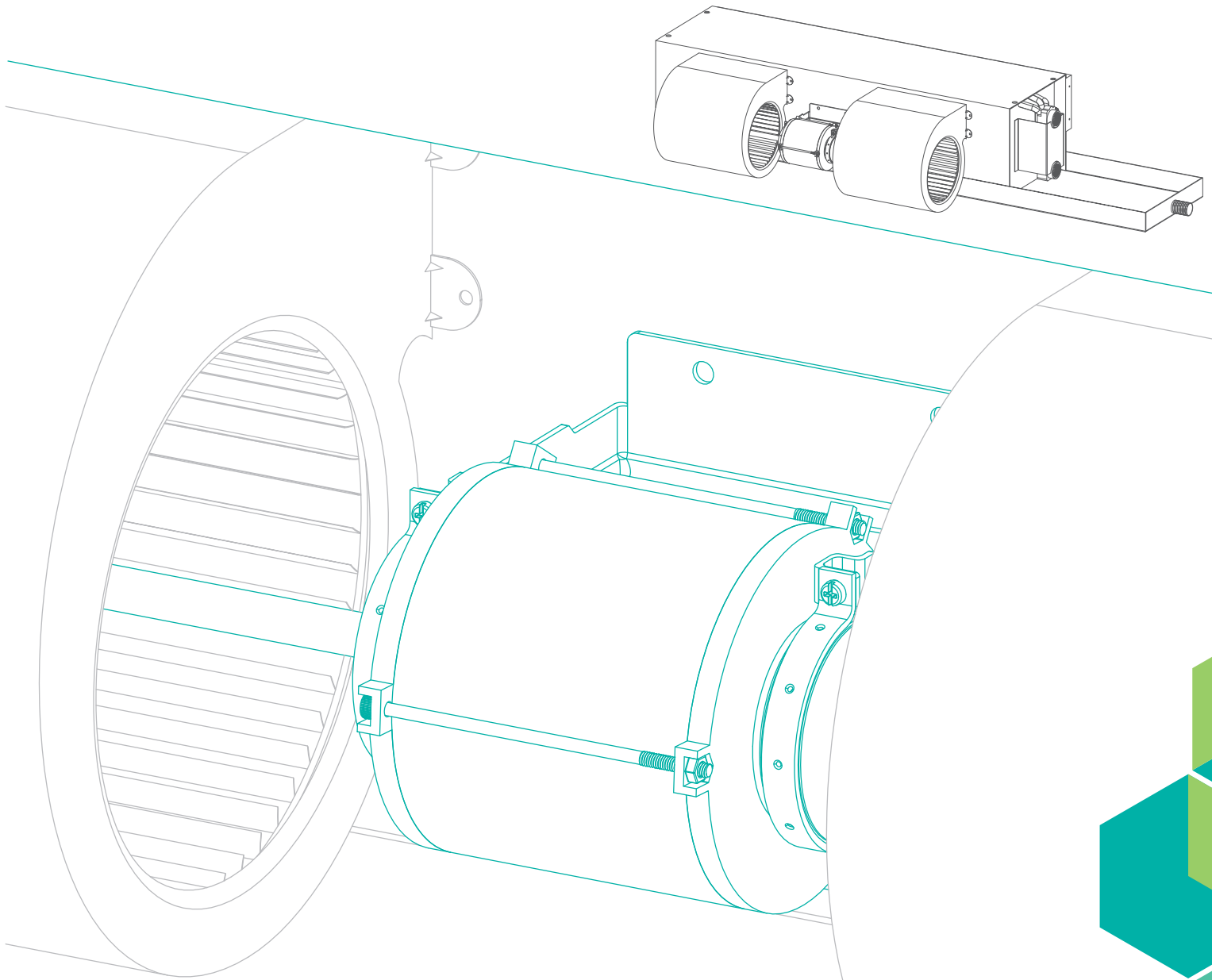


# DC FCU

## 直流變頻室內空調送風機

DC INVERTER TYPE FAN COIL UNIT

DC INVERTER TYPE FAN COIL UNIT



自動計算空調用量及電費，風機、電動閥異常顯示、紀錄、管理。

Automatic calculation of HVAC consumption and electrical fee,  
Running status recording and management of fan and valve.

**PES TOPWELL**



### 高效綠能技術 Efficient Green Technology

Topwell為潔淨室（CLEAN ROOM）DC FFU（FAN FILTER UNIT）的主要生產供應商，產品遍佈國內外各大電子廠（台積電、友達、群創、日月光、矽品、富士電機、晶元電等），單一案件達仟台以上的運轉實績不計其數，並將此DC FFU的高階應用技術，移轉用於開發生產商業用途之DC FCU產品，大幅提昇DC FCU的技術應用層次，明顯領先既有市場上的同質性產品。

Topwell is a major DC FFU(Fan Filter Unit) supplier for cleanroom application in the microelectronic industry (includingTSMC, AUO, INNOLUX, ASE, SPIL, Fuji Electrics and EPISTAR), around the Asia region. For most of job records, the installed FFU quantity is over thousands in one single project. By accumulating the on-site experience, the DC FFU technology is applied to the commercial DC FCU. In addition to the high quality, the FCU is also designed with advanced applications in the FCU market.

Topwell的市場定位為高效綠能技術（Efficient Green Technology）產品的生產供應者，我們的產品包括知名品牌PES儲冰槽、自主設計生產的BLDC直流無刷馬達、及智能化的控制系統等，將跨領域的技術加以整合應用，除了可強化既有產品的功能外，並將產生新的節能價值要素，這些高效智能的綠能技術，使原產品產生「質」的變化，另其具備更強大、更周延的能力，可輔助改善人類永續發展的需求，成為一種友善環境的新技術，在如今越來越注重生態和技術導向的社會，高效綠能技術對於奇立實業具有重大的發展意義。

Topwell, as a manufacturer of Efficient Green Technology product, is manufacturing various of energy efficient products including PES Ice Storage Tank, in-house designed BLDC motor and smart control system. Through the integration of various technology, the functions are well enhanced and the values of energy saving are created as result. In further, by adopting the smart efficient green technology, the product is converted to expand the capability, to meet the need of sustaining development as well as environmental friendly technology.

### 自我的肯定與要求 Affirmative Approach Into Product Standard

奇立實業以客觀的評量標準，製造國際性的產品。

CHYI LEE applies the objective evaluation standard into manufacturing the international product.



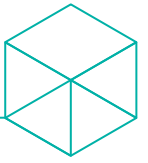
Implement and enhanced with good quality



Technical research and development



Responsibility of global village



## 產品特點 Product Features

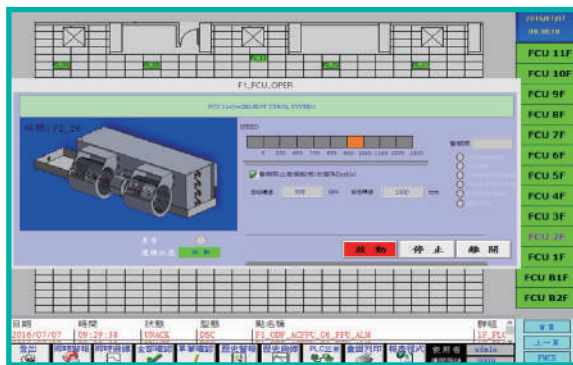
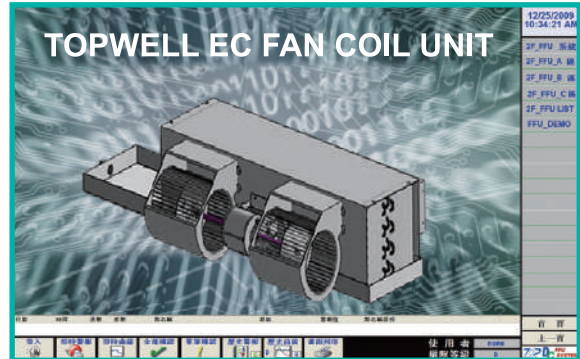


- ◆ 雙溫度控制系統，可自動計算空調使用量及電費（免使用BTU表），可更改設定計量的組合單元，免除因內隔間及管線變動後，既設BTU表無法計量的缺點。  
Patented dual temperature control system, Automatic calculation of HVAC consumption and electrical fee (substituting BTU meter), flexible in grouping for calculation in case of partition and piping layout modification.
- ◆ 比AC同等規格送風機節能50%電力。  
Over 50% of energy saving than AC FCU.
- ◆ 可單機、群組迴路控制，或採控制中心集體控制管理。  
Individual control, group control or Central control management.
- ◆ 具馬達、電動溫控閥異常顯示、紀錄功能，提升服務管理的方便性。  
Running status recording and management for motor and valve.
- ◆ 馬達採旋波驅動方式，低噪音、低震動、無低頻電磁聲。  
Sine-wave BLDC, low vibration, low noise and elimination of low frequency magnetic noise.
- ◆ 馬達軸承處具軸電流抑制設計，可確保培林不會發生電蝕情形，影響培林的運轉壽命。  
Motor bearing is protected from electrical corrosion to ensure the maximum service life.
- ◆ 免費提供控制軟體，採開放式通訊界面，相容於INTOUCH、IFIX、CIMPLICITY等市售常用圖控軟體，控制系統整合容易。  
Free control software or open protocol enable to be integrated into commercial FMCS such as INTOUCH, IFIX, CIMPLICITY...etc.
- ◆ 控制基板符合EMC、SEMI相關規範及標準，內建諧波抑制器，有效降低對用戶端電力品質的干擾。  
Motor controller is designed to comply with EMC, SEMI standards, power correction filter is implemented to reduce THD(Total Harmonic Distortion)to prevent the power quality from interference.
- ◆ 自主馬達生產線具歐盟CE及中國3C認證，可有效管控馬達品質。  
In-house production of BLDC motor, CE and 3C (China)certified by CE, ensure quality and reliability.

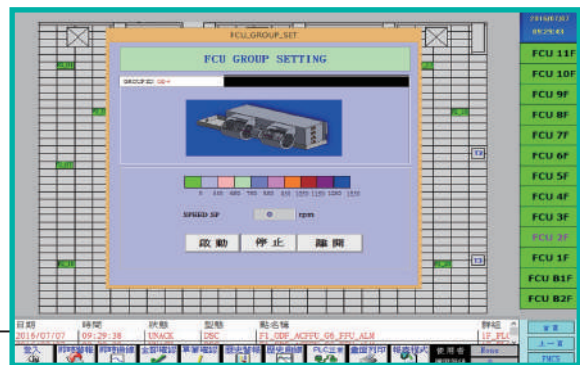


### 主要控制功能 Monitoring and control function

- ◆ 單機控制 Individual control
- ◆ 群組迴路控制 Group control
- ◆ 控制中心集體控制 Control Centre by Server
- ◆ 現場直接控制 Local Control by Local Clients
- ◆ 遠端連線控制 Remote Control by Internet
- ◆ 跨平台整合能力 OPC service
- ◆ BA系統直接整合 BA system integration via HMI (ex : Intouch , IFIX...etc. )



單機運轉操作畫面  
Individual control display



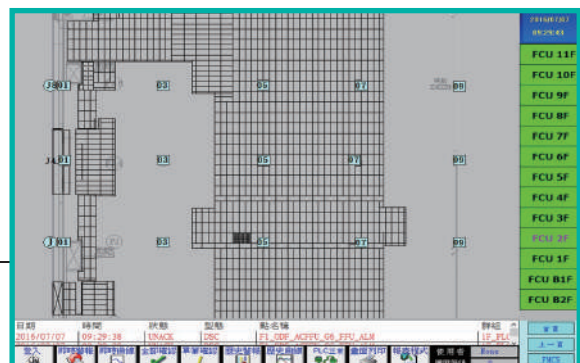
多機群控運轉操作畫面  
Group control display



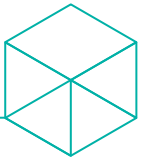
可將CAD圖面直接轉為圖控畫面  
Control layout converted from CAD layout

中文INTOUCH、IFIX、CIMPLICITY等常用市售圖控軟體，監控系統整合容易

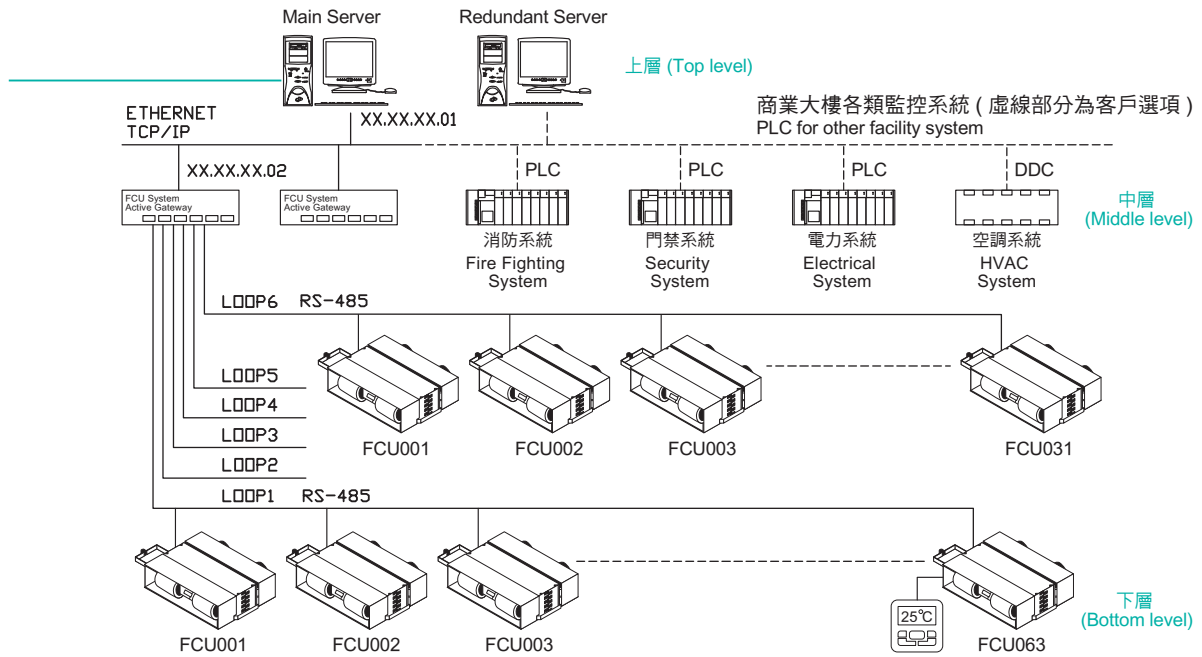
Easy integration to BA System via INTOUCH, IFIX, CIMPLICITY...etc.



圖控系統的軟體編輯及試機調整，Topwell 100% 完全自主處理，可於24小時內完成業主的變更需求。  
Testing, commissioning and maintenance service fully local supported.



## DC FCU監控系統架構 DC FCU System



註：本系統之FCU控制器為監控通訊版，另有非監控版控制器提供單機手動調速及警報乾接點功能  
Note: The non-communication type, which is equipped only with manual control and alarm dry contact, is also available.

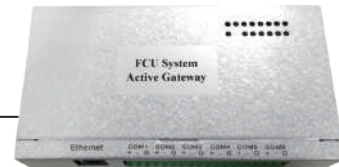
### 上層監控端 Top level: HMI

- ◆ 可透過ETHERNET 網路使用套裝圖控軟體，例如：INTOUCH, IFIX, CIMPLICITY 等市面常用軟體，或自行開發之監控軟體，亦可以整合至既有的大樓監控系統。  
Via ETHERNET, the HMI (ex. INTOUCH, IFIX, CIMPLICITY or TOPWELL M/C SYSTEM) is able to monitor and control the FCUs. Integration to existing FMCS is also applicable.
- ◆ 可使用市售人機介面螢幕對FCU進行單機或群組控制。  
Compatible to commercial HMI for FCU individual or group control.

### 中層資料收集端 Middle level: Active gateway

資料收集器會主動將下層FCU控制器的資訊收集  
Gathering data from FCU controller actively.

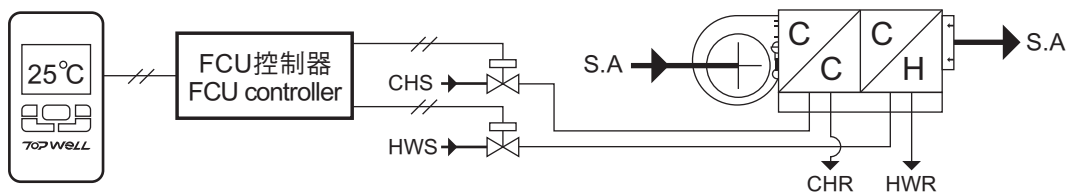
- ◆ 標準規格，FCU監控系統專用。  
Standard application for FCU system.



### 下層FCU控制器 Bottom level: FCU controller

室內人機介面操控器（網路型及非網路型）Indoor HMI (central control type & local control type)

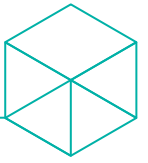
- ◆ 轉速範圍：350~1200rpm
- ◆ 轉速最小顯示值：1rpm





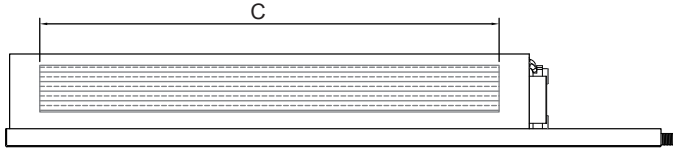

**機型與規格 Model & Specifications**

規格 Specifications		機型 Model					
		FCU400DC	FCU600DC	FCU800DC	FCU1000DC	FCU1200DC	FCU1400DC
冷房能力(BTU/H) Cooling Capacity		12500	19950	24100	32500	38000	42500
暖房能力(BTU/H) Heating Capacity		15000	24000	28900	39000	45600	51000
額定風量(CFM) Standard Air Volume		400	600	800	1000	1200	1400
		無段變速風量調整 Stepless Adjustment					
水流量(Gpm) Water Flow		2.7	4.0	5.3	6.6	8.0	9.5
電源規格 Power Source		I PH-220V-50/60Hz					
消耗功率 Power Consumption	標準型 (W)	60	70	100	129	157	189
	高靜壓 (W)	73	88	117	156	179	221
運轉電流 Running Current	標準型 (A)	0.29	0.34	0.47	0.6	0.72	0.87
	高靜壓 (A)	0.35	0.41	0.54	0.72	0.82	1.01
馬達型式 Motor Type		直流無刷變頻馬達 BLDC VFD MOTOR 軸承處具抗電蝕 (Current Burn) 設計, 控制基板具諧波抑制功能。 Motor bearing protection from electrical corrosion, controller with THD reduction.					
盤管型式 Coil Type		鋁鍍片紫銅管排 Slit Aluminum Fins copper tubes 1200psi水壓氣密洩漏試驗 1200psi leakage test					
風扇型式 Fan Type		前曲葉片離心雙吸式 Double Inlet Centrifugal Forward-Curved Fan					
機體規格 Specifications		箱體採用鍍鋅鋼板沖壓而成, 內襯保溫材, 絕不生成冷凝水。 Galvanized steel casing with insulation to prevent condensation. 排水盤採用不銹鋼板一體沖壓成型, 無漏水、腐蝕之慮。 SUS pressed drain pan to avoid leaking and corrosion.					
配管 Inch Pipe	冷熱水管 Water Supply	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
	排水管 Drain	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
附註說明 Explanatory Notes		表列冷氣能量之室內氣流條件為: 80°F DB 67°F WB, 入口水溫45°F之能力。 The above cooling capacity is based on indoor air condition: 80°F DB 67°F WB, water inlet: 45°F 表列暖氣能量之室內氣流條件為: 70°F DB 60°F WB, 入口水溫110°F之能力。 The above heating capacity is based on indoor air condition: 70°F DB 60°F WB, water inlet: 110°F					



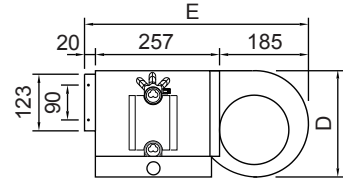
室內送風機外型尺寸 FAN COIL UNITS Dimension ( Ceiling Concealed Type )

YVFCR-1000

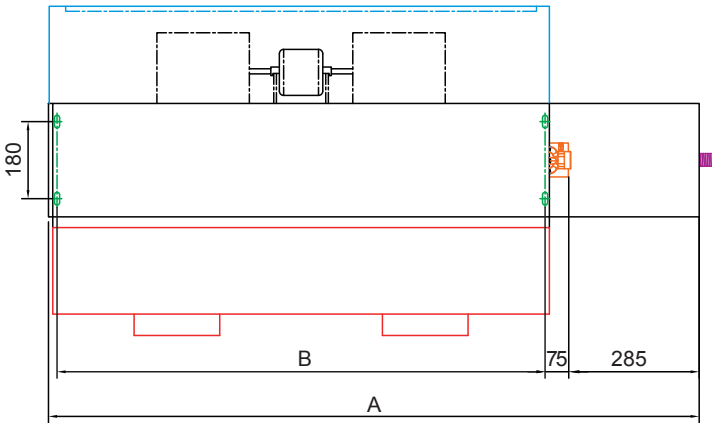


- ◆ 灰線：出風口  
GRAY : Outlet

一般型側面尺寸  
Side Dimension

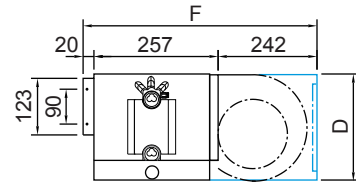


YVFCR-800



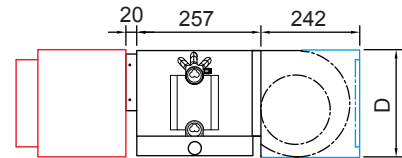
- ◆ 藍線：附回風箱  
BLUE : With Return-Air Box
- ◆ 紅線：附集風箱  
RED : With Rlenum Box
- ◆ 綠線：吊孔  
GREEN : Anchor Holes(4-12x13L)
- ◆ 橘線：進出水接管  
ORANGE : Water Conn
- ◆ 紫線：排水接管  
PURPLE : Drain Conn(3/4MPT)

附回風箱側面尺寸  
With Return-Air Box



- ◆ 藍線：附回風箱  
BLUE : With Return-Air Box

附集風箱+回風箱側面尺寸  
With Plenum & With Return-Air Box



- ◆ 藍線：附回風箱  
BLUE : With Return-Air Box
- ◆ 紅線：附集風箱  
RED : With Rlenum Box

尺寸：毫米 Size:mm	機型 Model					
	FCU400DC	FCU600DC	FCU800DC	FCU1000DC	FCU1200DC	FCU1400DC
A	990	1210	1470	1615	1765	1915
B	595	815	1080	1230	1380	1630
C	565	785	1050	1200	1350	1600
D	246					
E	462 (無回風箱)					
F	519 (附回風箱)					



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